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## PROJECT DEVELOPMENT REPORT

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**RENEWAL APPLICATION FOR THE AGRICULTURAL USE OF CLASS B BIOSOLIDS / SLUDGES AND WASTES / RESIDUALS UNDER PART III, B, OF THE "GUIDANCE AND REGULATIONS GOVERNING THE LAND TREATMENT OF WASTES IN DELAWARE"**



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A handwritten signature in blue ink that reads 'M. Josh Stallings'.

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## **TABLE OF CONTENTS**

REPORT ACRONYMS.....	4
EXECUTIVE SUMMARY .....	5
1.0 INTRODUCTION.....	6
1.1 ADDENDUM ITEMS .....	7
1.1.1 COMPLIANCE – MONITORING WELL INSTALLATION .....	7
1.1.2 COMPLIANCE – GROUNDWATER MONITORING.....	7
1.1.3 COMPLIANCE – GROUNDWATER SAMPLING.....	8
1.1.4 COMPLIANCE INCLUDING VOLUNTARY MEASURES – SURROUNDING GROUNDWATER.....	9
1.1.5 VOLUNTARY COMPLIANCE – CONSERVATION BUFFERS.....	9
1.1.6 PERFORMANCE IMPROVEMENT – NEW LIME PLANT.....	9
1.1.7 COMPLIANCE – UPDATED VEGETATIVE MANAGEMENT PLAN.....	9
1.1.8 VOLUNTARY COMPLIANCE – UPDATED VEGETATIVE MANAGEMENT PLAN.....	9
1.1.9 COMPLINACE – REGULATED BUFFERS.....	9
1.1.10 SOIL SAMPLING .....	9
1.1.11 COMPLIANCE – VEGETATIVE MANAGEMENT PLAN .....	10
1.1.12 COMPLIANCE – VEGETATIVE MANAGEMENT PLAN .....	10
1.1.13 COMPLIANCE – VEGETATIVE MANAGEMENT PLAN .....	10
1.1.14 COMPLIANCE – ABANDONMENT OF OBSERVATION WELLS.....	10
2.0 SITE AND PROJECT DESCRIPTION.....	10
2.1 LOCATION MAP .....	11
2.2 TOPOGRAPHIC MAP .....	11
2.3 SOIL SURVEY MAPPING.....	12
2.4 GEOHYDROLOGIC CONDITIONS.....	12
2.5 GROUNDWATER MONITORING .....	12
2.6 DIRECTION OF GROUNDWATER FLOW .....	13
2.7 KNOWN CULTURAL OR HISTORIC RESOURCES .....	13
3.0 SITE SOIL CHARACTERISTICS.....	13
3.1 USDA SOIL CHARACTERISTICS .....	13
3.2 NARRATIVE DESCRIPTION AND CHARACTERIZATION OF IDENTIFIED SOILS.....	13
3.2.1 HYDROLOGY .....	13
3.2.2 INFILTRATION TESTING .....	13
3.2.3 SOIL SAMPLING .....	13
3.2.4 NUTRIENT MANAGEMENT PLAN.....	14
3.2.5 LAND LIMITING CONSTITUENTS.....	14



3.3	CONCLUSION.....	16
4.0	100 YEAR FLOOD ELEVATION .....	16
5.0	EXISTING VEGETATIVE COVER.....	16
6.0	PRESENT LANDOWNERS .....	17
7.0	PLAN OF OPERATION AND MANAGEMENT .....	17
9.0	VEGETATION MANAGEMENT PLAN, EROSION CONTROL, AND BEST MANAGEMENT PRACTICES .....	19
10.0	PEST MANAGEMENT PLAN .....	19
11.0	QUALITY ASSURANCE / QUALITY CONTROL PLAN .....	19
	REFERENCES.....	21

#### APPENDICES:

##### APPENDIX A:

- Letter of Intent
- Application for the Land Treatment of Waste Products
- Farm Lease Agreements
- Existing AGU Permit 1702-S-03
- Delaware Waste Transporters Permit Application
- DNREC List of Approved Land Application Materials
- Location Maps
- Reproductions of Sussex County Tax Maps
- USGS Quadrangles
- USDA-NRCS Soil Surveys
- Reproductions of DNREC NavMap (2007 SWMP Wetlands, Flood Zones, Wellhead Protection Areas)

##### APPENDIX B:

- BARRS Reporting

##### APPENDIX C:

- Groundwater Monitoring
- Direction of Groundwater Flow
- Average SHWT Spreadsheet

##### APPENDIX D:

- 2020 Metals and Soil Sampling Results

##### APPENDIX E:

- Site and Equipment Photographs

##### APPENDIX F:

- SOP for Land Application of Multiple Wastes
- SOP for Spray Field Application

## **REPORT ACRONYMS**

ARM, Inc.	Atlantic Resource Management, Inc.
AVD	Avoid Mapping Unit
BARRS	Delaware Biosolids and Residuals Reporting System
BMP	Best Management Practices
CDI	Clean Delaware, LLC
CEC	Cation Exchange Capacity
DGS	Delaware Geological Survey
DNL	Denial Mapping Unit
DNREC	Delaware Department of Natural Resources and Environmental Control
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
GPS	Global Positioning System
MPI	Minutes Per Inch
MWD	Moderately Well Drained Unit
N	Nitrogen
NWI	National Wetlands Inventory
OW/MW	Observation/Monitoring Well
P	Phosphorus
PDR	Project Development Report
PSI	Phosphorus Site Index
PSRP	Processed to Significantly Reduce Pathogens
QA/QC	Quality Assurance/Quality Control
Scaled	Scaled Engineering, Inc.
SHWT	Seasonal High Water Table
SOP	Standard Operating Procedure
SWD	Somewhat Well Drained Unit
SWMP	Statewide Wetland Mapping Project
TMDL	Total Maximum Daily Load
TP	Test Pit
UD	University of Delaware
US EPA	United States Environmental Protection Agency
USDA – NRCS	United States Department of Agriculture – Natural Resources Conservation District
USGS	United States Geological Survey

## **EXECUTIVE SUMMARY**

Scaled Engineering Inc, on behalf of Clean Delaware, LLC, has prepared this report to augment information submitted to the State of Delaware, Department of Natural Resources and Environmental Control (herein referred as “Department” and “DNREC”) November 2016, by ARM, Inc., regarding DNREC, Surface Water Discharges, Agricultural Utilization (AGU) Permit 1702-S-03 (formerly AGU Permit 1202-S-03) (see Appendix A). CDI is requesting renewal approval of two (2) subject, non-contiguous Farms (herein referred as Milton Farm – Fields 1 through 7, and Harbeson Farm – Fields 1 and 2) for the land treatment/application of Class B sanitary and non-sanitary wastes/biosolids/sludge, non-sanitary food processing residuals, and potable water iron residuals. The Lime Stabilization Operation at the Milton Site was constructed under Permit WPCC 3011/15 (formerly LTS 4002/96S). The former PDR was filed by ARM, Inc., dated November 16, 2016, and approved by DNREC. The land application use on the two (2) Farms was initiated in the 1980s, and has been ongoing for over 30 years.

The objective of this report is to explain the nature of the continued operation, and characterize changes in Operation and Management since 2016. To achieve this objective, Scaled reviewed current sampling/testing results, groundwater data, operation reports/procedures, conducted interviews with management staff, and reviewed the November 2016 PDR prepared by ARM, Inc. Much of the information provided in this report has been cited, referenced and/or paraphrased from the November 2016 PDR. Should a component(s) of this report require additional information or detail, please contact Scaled.

## **1.0 INTRODUCTION**

The operation involves land application and land treatment of stabilized, Class B biosolids/sludges, and other land treatable wastes/residuals approved by the DNREC, generated from wastewater treatment facilities, businesses, industries, municipalities, developments, and citizens in Delaware as part of normal agricultural activities. For the purposes of this PDR, the term “biosolids” refers to domestic and industrial solid materials (typically organic rich) and residuals recovered from a sewage treatment process that meet the Class B pathogen reduction requirements by a PSRP, as defined by EPA 40 CFR 503, that can be beneficially reused/recycled through application on an agricultural field to maintain and sustainably improve productive soils, and stimulate plant growth. The method employed in the application of the biosolids is generally injection of liquid, using liquid manure injection equipment. The surface application of liquid and solid biosolids, and other organic residuals are then implemented by the incorporation of a disc or disc harrow, which ultimately buries the liquid or solid residual.

A secondary method approved on the Milton Farm involves the application of lime stabilized septage via a traveling sprinkler gun. Application parameters are as follows: maximum application rate of one-half (0.5) acre-inch of supernatant per week; instantaneous hydraulic loading rate shall not exceed 0.25 inches per acre per hour; septage supernatant application rates are limited to two hundred seventy thousand (270,000) gallons per acre per year, or the nitrogen requirement of the crop (whichever is reached first). Septage supernatant may only be spray irrigated onto Milton Farm Fields one (1), two (2) and four (4) without written Department approval. Septage shall be applied evenly amongst spray zones in each approved field.

Drinking water treatment iron residual water shall be applied at a rate that does not cause ponding or runoff from the application area.

Agricultural utilization of biosolids provides an environmentally and ecologically safe means of byproducts reuse when performed according to State and Federal Permits, and requirements established under a well-managed and operated company and setting. The renewal of this AGU Permit signifies a need to satisfy the continuing demand for the land treatment of approved materials in this region by a full service company. CDI is a well-managed and tenured company that strives for consistency and efficiency of performance in waste materials management, transportation, treatment, and application/disposal in the most environmentally friendly methods possible. CDI recognizes the company commitments, requirements, and varied aspects of the agricultural utilization program by providing signed land-use documents for DNREC review and approval. CDI's goal is to comply with the DNREC Regulations regarding the land application of Class B biosolids/sludges/residuals/wastes at agronomic rates, to work under a Nutrient Management Plan, and be a conscientious neighbor to the surrounding communities.

Scaled was contracted by Mr. Gerald “Gerry” R. Desmond, General Manager of Clean Delaware, LLC (DNREC Licensee Class B, E, F and H) to complete the renewal of the aforementioned AGU Permit. CDI transports noted wastes under Waste Haulers Permit WH-13. The Permit covers approximately two hundred forty-six (246) acres of land tracts, inclusive of Sussex County Tax Map Parcels:

- a) 2-35-14.00-Parcels 1.00, 2.00, 3.00, 60.00 (Milton Farm)
- b) 2-35-30.00-62.00 (Harbeson Farm)

Land application at the former Ellendale Site (New Market) is being discontinued; therefore, the site is excluded from this PDR. However, sampling/testing data for the former site may be included with data from the Milton

Farm and Harbeson Farm. The sampling/testing data for the New Market site was not removed for the purpose of conserving the integrity of the sampling/testing data reports.

The land treatment/agricultural utilization of sanitary and non-sanitary wastes is outlined in the “List of Approved Land Application Materials” letter from DNREC, dated July 16, 2021 (see Appendix A). The interpretations and recommendations contained herein are based on the *Guidance and Regulations Governing the Land Treatment of Wastes*, dated August 1988, amended October 1999; Title 40 Code of Federal Regulations, Part 503, *Standards for the Use and Disposal of Sewage Sludge*; the aforementioned State Permits and County Use Approval (email from Sussex County Planning and Zoning, dated November 04, 2011, stating land application land-use prior to County Conditional Use Requirements); and present DNREC operational policy. This renewal process was initiated with a “Letter of Intent”, dated June 2, 2021 (see attached Appendix A).

Enclosed with this report in Appendix A are: the “Letter of Intent”, Application for the Land Treatment of Waste Products, Farm Lease Agreements, Existing AGU Permit 1702-S-03, Delaware Waste Transporters Permit Application WH-13, DNREC “List of Approved Land Application Materials”, Location Maps, reproductions of the Sussex County Tax Maps, United States Geological Survey (USGS) Quadrangles, USDA-NRCS Soil Surveys (SSURGO) DE 005, reproductions of the DNREC NavMap (2007 SWMP Wetlands, Flood Zones, Wellhead Protection Areas). Appendix B: BARRS reporting by Gerry Desmond of CDI. Appendix C: Groundwater Monitoring and Direction of Groundwater Flow, and Average SHWT for the two (2) Farms. Appendix D: 2020 Metals and Soil Sampling Results. Appendix E: Site and Equipment Photographs. Appendix F: CDI’s SOP for Land Application of Multiple Wastes, and Spray Field Application.

The November 2016 PDR prepared by ARM, Inc. included five (5) Farm Plans, which depicted former Terra Firma Consulting, Inc. soil profile locations and soil mapping units, watercourse data, adjacent land-uses, and area wells. Project boundaries, existing improvements, wells, required buffers, conservation buffers, and farming/land application field layouts were depicted on the plan(s). Also included were pertinent point soils data including depth to limiting zone (as evidenced by soil morphology), estimated subsoil permeability rates (based on hand texturing methods), soil series to which the soil profile correlates (current NRCS Delaware legend), and depth to free water (where observed) on the respective dates of the former Detailed Soils Investigation by Terra Firma Consulting, Inc. The plans were underlain by the aerial photograph taken during a 2007 state flyover. The five (5) Farm Plans can be provided upon request.

## **1.1 ADDENDUM ITEMS**

The following items represent addendum information to the 2011 PDR, provided in the November 2016 PDR prepared by ARM, Inc. The items have been updated for this report.

### **1.1.1 COMPLIANCE – MONITORING WELL INSTALLATION**

Installation of twenty (20) Monitoring Wells in 2013, and two (2) Monitoring Wells in 2015. Eleven (11) Monitoring Wells were installed at the Milton Farm with Permits #242592 to 242594, and 242949 to 242956 (2013). Six (6) Monitoring Wells were installed at the New Market / Ellendale Farm with Permits #242584 to 242588 (2013), and 250843 (2015). Five (5) Monitoring Wells were installed at the Harbeson Farm with Permits #242580 to 242583 (2013), and 250844 (2015). The Monitoring Well specifications are on file.

### **1.1.2 COMPLIANCE – GROUNDWATER MONITORING**

Water level readings were performed by Gerry Desmond (DNREC License #4570) and/or Daniel J. Cleary (DNREC License #5483) of CDI, in conjunction with Steven Cahill, P.G. of Duffield Associates, LLC. Readings were performed with a Heron Instruments dipper-T 50ft water level meter. A summary of the highest recorded groundwater level for each well is provided in the table below:

WELL #	WELL LOCATION	GROUNDWATER ELEVATION	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	DATE
242592	Milton Farm	23.19	8.38	Feb – 2021
242593	Milton Farm	19.05	12.02	Nov – 2018
242594	Milton Farm	21.10	12.41	Nov – 2018
242949	Milton Farm	18.78	7.47	Nov – 2018
242950	Milton Farm	19.54	7.14	Mar – 2019
242951	Milton Farm	22.45	11.31	Mar – 2021
242952	Milton Farm	20.57	8.63	Mar – 2021
242953	Milton Farm	19.80	12.25	Feb – 2021
242954	Milton Farm	16.83	14.83	Mar – 2021
242955	Milton Farm	23.64	8.25	Feb – 2021
242956	Milton Farm	21.39	9.22	Mar – 2021
242580	Harbeson Farm	29.86	5.10	Mar – 2021
242581	Harbeson Farm	29.13	6.93	Mar – 2021
242582	Harbeson Farm	31.62	4.25	Mar – 2021
242583	Harbeson Farm	32.04	3.77	Mar – 2019
250844	Harbeson Farm	30.04	3.24	Mar – 2019

Based on eight (8) years of historic high water level readings, the seasonal high groundwater table is greater than thirty-two (32) inches beneath grade at both farms. The thirty-two (32) inch figure allows for the required twenty-four (24) inches of separation distance beneath the plow zone (8 inches deep). See Appendix C for groundwater level data. Monitoring Well locations are provided in the 2016 PDR. This groundwater data supersedes the seasonal high water tables based on soil morphology characterized by Terra Firma Consulting, Inc. in 2008. It is important to note that zones of saturation may occur higher in the soil profiles than observed by groundwater testing, and land application must follow proper soil moisture conditions with no significant zones of saturation within 32 inches of the soil surface. Based on the water level readings, the two (2) farms meet the DNREC seasonal high water table (hydrologic) limiting zone criteria for year round application. Based on the well data and proven seasonal high water table, quarterly water level readings are sufficient to monitor groundwater levels.

### 1.1.3 COMPLIANCE – GROUNDWATER SAMPLING

Routine groundwater monitoring in 2013 (presently quarterly to every other month depending on DNREC monitoring requirements by well) added to the *Operation and Maintenance* Plan under the direction of DNREC. Testing is by registered Delaware Professional Geologist Steven Cahill of Duffield Associates, Inc. See Appendix C for the direction of groundwater flow diagrams for the two (2) farms. The regular monitoring has been directly filed with Brian Churchill of DNREC.

#### **1.1.4 COMPLIANCE INCLUDING VOLUNTARY MEASURES – SURROUNDING GROUNDWATER**

Neighboring drinking water well testing (previously performed), addition of water treatment systems (maintained by CDI), and maintenance/monitoring of potentially impacted groundwater supplies under the direction of DNREC.

#### **1.1.5 VOLUNTARY COMPLIANCE – CONSERVATION BUFFERS**

Continued use of deep rooted, Alfalfa hay (Timothy) conservation buffers to the land application perimeter of all fields for increased nutrient uptake due to monitoring well results, sediment attenuation, and positive influence on PSI. The alfalfa hay is harvested two (2) to three (3) times a year in round/roll hay bales.

#### **1.1.6 PERFORMANCE IMPROVEMENT – NEW LIME PLANT**

Continued use of Lime Plant upgraded for the stabilization of septage. Per the Permit approved by DNREC, the Lime Stabilization Plant, includes: one (1) four-foot (4') by four-foot (4') tank with bar screen; one (1) Siemens 5100W magnetic flow meter with six hundred (600) gallon per minute capacity; one (1) Lakeside Raptor Unit; one (1) trash dumpster; one (1) fourteen hundred (1,400) gallon Grit Chamber Tank; two (2) six thousand (6,000) gallon mixing tanks with four (4) integral WS\_D3Series Model 3888D3 Goulds pumps; valves; interconnecting three-inch (3"), four-inch (4") and six-inch (6") diameter pipes and related facilities as located at the Milton Farm Operation Facility on Isaacs Road (DE Route 30), north of Milton Highway, Milton, Broadkill Hundred, Sussex County, Delaware. The plant significantly reduces vectors for pathogens, and pests contacting the septage/wastes.

#### **1.1.7 COMPLIANCE – UPDATED VEGETATIVE MANAGEMENT PLAN**

CDI voluntarily left fields out of land application rotation under the direction of DNREC. The Milton Farm Field 6 and Field 7 have been left out of land application rotation since 2016. The fields will be continually monitored and will not be utilized for land application unless approved by DNREC.

#### **1.1.8 VOLUNTARY COMPLIANCE – UPDATED VEGETATIVE MANAGEMENT PLAN**

Continued relinquishment land application of dry sanitary sludge in 2017 until groundwater conditions improve to a satisfactory level as determined by DNREC.

#### **1.1.9 COMPLINACE – REGULATED BUFFERS**

Buffers per the existing AGU Permit 1702-S-03 are strictly adhered to.

#### **1.1.10 SOIL SAMPLING**

Analysis of heavy metals shows no adverse levels of these constituents historically for the two (2) farms. Soil samples collected by Keen Consulting were analyzed by Brookside Laboratories, Inc. (see results in Appendix D). Metals content sampled within the project area continues to meet DNREC requirements for the land treatment of wastes. Furthermore, assuming the same trends in application and soil sampling of heavy metals, neither farm will be limited for land application by metals content within the next ten (10) years (minimum).



### **1.1.11 COMPLIANCE – VEGETATIVE MANAGEMENT PLAN**

The Nutrient Management Planning efforts for the two (2) farms are by Tak Keen of Keen Consulting, Inc., for the Farmer, Jeff Wells. The plan results may be submitted under separate cover under the direction of the interested parties, and DNREC. The most recent soil samples furnished by Keen Consulting, Inc. are attached in Appendix D.

### **1.1.12 COMPLIANCE – VEGETATIVE MANAGEMENT PLAN**

CDI continues to work closely with the Farmer to coordinate the crop planting schedule immediately following application for increased nutrient uptake of nutrients in the root zone, and to control wind and water erosion. The goal is to better time plowing events with respect to the cropping schedule and land application operation.

### **1.1.13 COMPLIANCE – VEGETATIVE MANAGEMENT PLAN**

Application of supplemental fertilizer only at agronomic rates under the Nutrient Management Plan. Approval of supplemental fertilizer applications only under the direction of DNREC.

### **1.1.14 COMPLIANCE – ABANDONMENT OF OBSERVATION WELLS**

Former wells that were undocumented by the lack of Well Completion Reports and direct Well Driller Licensure supervision were abandoned at the request of DNREC.

## **2.0 SITE AND PROJECT DESCRIPTION**

The current permit renewal is limited to the application of stabilized sludge, septage, lease trap waste and other non-hazardous organic residuals to two (2) approved sites at agronomic rates. The sites designated as the approved sites are the Milton Farm, located on Route 30, north of Route 16, consisting of 216 acres, and the Harbeson Farm, located on the south side of Route 9, east of Route 5, consisting of 32 acres. Details of each Farm are provided in Section 3 and in appendices B, C and D of the *2011 PDR*, and Appendix A of this document.

The operation involves the transportation of stabilized wastewater sludge from Wastewater Treatment Facilities in Delaware, and the transportation of stabilized septage, holding tank waste, and Minor Wastewater Treatment Facility sludge, treated at the Milton site, to the approved sites for application at agronomic rates. Wastewater Treatment Residuals, already satisfactorily treated by a PSRP, and non-hazardous residuals containing no sanitary waste component are land applied without lime stabilization, if approved by DNREC.

Stabilized Wastewater Treatment Facility sludge and lime stabilized sludge will be delivered to the approved sites in accordance with Delaware Waste Transporters Permit Number WH-13 (see Appendix A), where it will be land applied at agronomic rates. Dewatered sludge will be surface applied and mechanically incorporated within six hours of application. Liquid sludge will be applied either by means of surface application or by subsurface injection. Liquid sludge that is surface applied shall be incorporated mechanically within six hours of application. Non-hazardous residuals containing no sanitary waste that are land applied will be treated as the above residuals. Surface applied waste does not need to be incorporated mechanically if applied to a continual grass crop, unless otherwise directed by the DNREC.

Lime stabilized sludge supernatant generated during the storage of stabilized sludge, may be spray irrigated over a portion of the approved Milton application site using a traveling reel gun spray device. This practice is limited to the Milton Farm Fields one (2), two (2) and four (4), unless additional fields are approved by DNREC. Records of daily volume sprayed over a specific area are kept. Analytical sampling and testing for nutrient, metal and bacteriological characteristics are periodically performed.

**Amount of Residuals and Biosolids Land Applied annually at all Sites  
(2021 Waste Transporters Permit Application Records)**

<b>WASTE TYPE</b>	<b>QUANTITY COLLECTED</b>
Septage	4,500,000 gal/yr
Holding Tank Waste	1,200,000 gal/yr
Grease Trap Waste and/or Cooking Oil Waste	635,000 gal/yr
Portable Toilet Waste	420,000 gal/yr
Municipal or Industrial Biosolids	667,000 gal/yr
Sludge From Package Treatment Plants	200,000 gal/yr
Other Non-Hazardous Liquid Waste	2,223,000 gal/yr

## **2.1 LOCATION MAP**

Five (5) Sussex County, Delaware parcels are proposed for land treatment of sanitary and non-sanitary wastes associated with byproducts, as outlined in a “List of Approved Land Application Materials” letter from DNREC, dated July 16, 2021 (see Appendix A). These wastes include sanitary wastes from local municipalities and poultry packagers, septage from local liquid waste haulers and large community wastewater systems, and non-sanitary wastes from local poultry and meat packagers, breweries, and nearby wastewater treatment plants. The farm locations are well documented in the 2011 PDR.

The parcels are surrounded largely by agricultural lands and/or woods; however, there are residences in the immediate area (1,000 foot radius). Wells within 150 feet of the project areas, or as directed by the client and/or DNREC, were documented in the 2016 PDR.

## **2.2 TOPOGRAPHIC MAP**

Documented in 2011 PDR. Reproductions of the USGS Quadrangles Topographic Maps are provided in Appendix A. Plans provided in the 2016 PDR show topographic data from a survey by Cotten Engineering, LLC, and support these ranges in elevation. Topographically, the sites are nearly level to gently sloping, with most slopes less than two (2) percent, and a minority ranging two (2) to five (5) percent.

The adjacent branches and on-site farm ponds are depicted as blue-line (perennial) watercourses/drainage features on the USGS Topographic Maps. There are no tax ditches or private ditches within the project areas. The land application areas meet all regulatory setbacks from the ordinary high water line of all watercourses.

The Milton Farm is in the Delaware Bay major watershed and Broadkill River minor watershed (HUC 020402070802). The northern and northeastern most field areas are adjacent to Ingram Branch and a Farm Pond.

The Harbeson Farm is in the Delaware Bay major watershed and Broadkill River minor watershed (HUC 020402070803). The nearest watercourse is Beaverdam Creek, which runs to the west and north of the project area. Allen Harim Foods is within a one (1) mile radius of this site.

## **2.3 SOIL SURVEY MAPPING**

Documented in 2011 PDR.

## **2.4 GEOHYDROLOGIC CONDITIONS**

Documented in 2011 PDR.

## **2.5 GROUNDWATER MONITORING**

Water level readings were performed by Gerry Desmond (DNREC License #4570) and/or Daniel J. Cleary (DNREC License #5483) of CDI, in conjunction with Steven Cahill, P.G. of Duffield Associates, LLC. Readings were performed with a Heron Instruments dipper-T 50ft water level meter. Readings were from Monitoring Wells described in Section 1.1.1 of this report. Readings were conducted on a nearly monthly basis, starting in May of 2013.

The highest recorded groundwater elevations, and corresponding shallowest measured depth to groundwater below existing grade (well standpipe excluded) are provided in the table in Section 1.1.2 of this report. The shallowest depth to groundwater from existing grade from all Monitoring Wells at the Milton Farm was 7.14 feet, recorded March 2019. The shallowest depth to groundwater from existing grade from all Monitoring Wells at the Harbeson Farm was 3.24 feet, recorded March 2019. Well data provided in the DGS indicates groundwater was above average in March 2019, and was the recorded seasonal high water table for 2019.

An average SHWT was calculated for each Monitoring Well by using the highest recorded groundwater elevation for each year (2013 to 2021). The “Average Seasonal High Water Table” spreadsheet is provided in Appendix C. The highest average SHWT for the Milton Farm is 8.15 feet below existing grade, recorded in Monitoring Well 242949. The highest average SHWT for the Harbeson Farm is 5.52 feet below existing grade, recorded in Monitoring Well 242582.

Based on the eight (8) years of high water level readings, seasonal high groundwater table is greater than thirty-two (32) inches beneath grade at both farms. The thirty-two (32) inch figure allows for the required twenty-four (24) inches of separation distance beneath the plow zone (8 inches deep). See Appendix C for groundwater level data. Monitoring Well locations are provided in the 2016 PDR. This groundwater data supersedes the seasonal high water tables based on soil morphology characterized by Terra Firma Consulting, Inc. in 2008. It is important to note that zones of saturation may occur higher in the soil profiles than observed by groundwater testing, and land application must follow proper soil moisture conditions with no significant zones of saturation within 32 inches of the soil surface. Based on the water level readings, the two (2) farms meet the DNREC seasonal high water table (hydrologic) limiting zone criteria for year round application. Based on the well data and proven seasonal high water table, quarterly water level readings are sufficient to monitor groundwater levels.

Given soil conditions on-site, year round land application within the two (2) farms is feasible when the groundwater is deeper (greater) than 32 inches beneath the soil surface. The Monitoring Well network of sixteen (16) Monitoring Wells was established in part to verify groundwater levels are deeper than thirty-two (32) inches

during the wet season, and in the wettest years (5 out of 10) of above-average precipitation prior to land application.

## **2.6 DIRECTION OF GROUNDWATER FLOW**

Geo-hydrologic investigations are by registered Delaware Professional Geologist Steven Cahill of Duffield Associates, Inc. The direction of groundwater flow monitoring for the two (2) farms is attached in Appendix C.

## **2.7 KNOWN CULTURAL OR HISTORIC RESOURCES**

A review and search for cultural and/or historic resources within the project planning area was beyond the scope of this investigation. The project does not involve federal funding; therefore, an in-depth review of these parameters is not required. In the performance of routine work previously performed by ARM, Inc., and CDI, no historical resources were observed to be present on the site.

## **3.0 SITE SOIL CHARACTERISTICS**

### **3.1 USDA SOIL CHARACTERISTICS**

Documented in 2011 PDR.

### **3.2 NARRATIVE DESCRIPTION AND CHARACTERIZATION OF IDENTIFIED SOILS**

Documented in 2011 PDR.

#### **3.2.1 HYDROLOGY**

See report Sections 2.4 to 2.6.

#### **3.2.2 INFILTRATION TESTING**

Documented in 2011 PDR.

#### **3.2.3 SOIL SAMPLING**

Mr. Tak Keen of Keen Consulting, Inc. performed soil sampling in the Fall of 2020 through composite samples of the surface (0 to 12 inches deep) topsoil horizon per Field (Nutrient Management Field Boundaries). Results were analyzed by Scaled for metal concentrations. Results of chemical analysis performed by Brookside Laboratories, Ohio (agronomic tests) of soil samples are attached in Appendix D. Soil chemistry (metals) within the project area meets the DNREC requirements for the land treatment of wastes.

Nutrient Management and Agronomic Planning are to be provided by Keen Consulting, Inc. under separate cover.

A PSI study was performed by Tak Keen of Keen Consulting, Inc. See Appendix D for the PSI results, dated 11/18/2021. Results of the study indicate a low PSI for the Milton Farm – Field 4. Per the report, a low PSI is defined as less than 50 PSI and has low potential for P movement from the site given current management

practices and site characteristics. There is a low probability of an adverse impact to surface waters from P losses from this site. Nitrogen-based nutrient management planning is satisfactory for this site. Results of the study indicate a medium PSI for the Milton Farm – Fields 1, 2, 3, and 5, and the Harbeson Farm. Per the report, a medium PSI is defined as 51 to 75 PSI and has medium potential for P movement from the site given current management practices and site characteristics. Practices should be implemented to reduce P losses by surface runoff, subsurface flow, and erosion. Nitrogen-based nutrient management should be implemented no more than one year out of the three. Phosphorus-based nutrient management should be implemented two years out of three during which time P applications should be limited to the amount expected to be removed from the field by crop harvest or soil test P based application recommendations, whichever is greater.

Per an email from Tak Keen regarding the above mentioned PSI, the organic P applications amounts employed a “worst case” scenario in order to buffer against a possible over application of P over the 3 year span. The PSI shows applying more P than what has been to date, while ensuring the PSI rating remains in the “medium” range. Additionally, the latest soil test P data from this fall (2021) was input. All areas have more than one sample. For the purposes of running the PSI, the highest soil P reading was selected from each area to ensure a “worst case” set of parameters was captured. Averaging the soil P numbers would reduce the PSI rating.

Continued use of the vegetative Alfalfa (Timothy) Hay buffers (planted since 2013) planted around the land application fields of the two (2) farms will help to limit or eliminate P runoff.

### **3.2.4 NUTRIENT MANAGEMENT PLAN**

Nutrient Management Plans will be submitted to DNREC under separate cover.

### **3.2.5 LAND LIMITING CONSTITUENTS**

#### **METALS**

The soil contains elemental compounds deposited through weathering of parent material or deposition of sediment eroded from probable distant sources of parent material. In most coastal plain agricultural soils, the native elements are of little environmental or public health concern. However, the practice of agriculture with the use of pesticides and fertilizer additives has altered local the soil chemistry. Pesticides, in particular, have caused both environmental and public health concerns in the Mid-Atlantic region. Prior to the discovery of organic compound-based pesticides, products containing heavy metals were used for weed and insect pest control. It is common to find elevated levels of arsenic, zinc, lead (primarily contributed by use of leaded gasoline fueled farm equipment), and even cadmium in older farm soil.

Heavy metals and organic compounds of concern are more likely found in wastewater and residual from highly industrialized regions. Land application of local wastewater residuals is like the use of animal manures in the contribution of heavy metal and organics to the agricultural soils of the region. With both federal and state regulation requiring the monitoring of chemical constituents of wastewater residuals, one can assume that proper utilization of wastewater residuals will not significantly add elements of concern to the soil.

Soil analysis provides an assurance that if an element of concern begins to accumulate, the practice of land application of wastewater residuals can be terminated before there is a public or environmental health risk. The detailed soil investigations for the two (2) sites utilized in CDI's application program, found the operation of more than 30 years has not adversely impacted soil at the sites.

No sludge or waste shall be applied if sample analysis yields pollutant concentrations in excess of the following values:	
Arsenic	41 mg/kg
Cadmium	39 mg/kg
Chromium	1,200 mg/kg
Copper	1,500 mg/kg
Lead	300 mg/kg
Mercury	17 mg/kg
Molybdenum	18 mg/kg
Nickel	420 mg/kg
Selenium	36 mg/kg
Zinc	2,800 mg/kg
PCB	10 mg/kg

## NUTRIENTS

Concern of nutritive constituents as limiting elements in the practice of land application of wastewater residuals poses a different problem. Ensuring fertility of an agricultural site is a challenge no matter what source of fertilizer is used. Additionally, the presence or absence of irrigation in the Mid-Atlantic region can impact the success of the best crop management plan resulting in over or under-fertilization of a crop. Harvesting a profitable crop may be vulnerable to disease and/or foul weather events in addition to concerns over proper fertilization and soil moisture. It is extremely important to use restraint in forecasting a successful crop year so that over-fertilization can be minimized.

CDI subcontracts the farming aspect of the operation to Jeff Wells. In cooperation with the farmer, residuals are applied based on the nutrient content, in preparation for planting a crop that will accumulate (uptake) the same amount of nutrients that are applied. CDI's annual agricultural utilization report has been used to present data and current practices on the two (2) farming operations. Class B Biosolids/Residuals are applied based on nutrient content. A crop is planted and harvested when mature. After harvesting, the crop yield is used to determine nutrient uptake. If there is a nutrient residual remaining in the soil (excess nutrients calculated to be present), then the residual application rate is decreased for the next rotational crop. A nutrient residual would be determined by the quantity of the applied nutrients and harvested crop. This information is readily available through the University of Delaware, College of Agriculture and Natural Resources, Cooperative Extension: Nitrogen removal by crops, June 28, 2013: <https://extension.udel.edu/factsheet/nitrogen-removal-by-delaware-crops>. If a crop is selected with a greater need for a specific nutrient than that supplied by the residual's nutrient contribution, then additional fertilizer addressing the crops requirements may be applied under the direction of DNREC.

While the N component of a residual's fertilization capacity can be managed, the contribution of P offers a challenge. Most crops require approximately one third of the P content of most residuals. This makes it difficult to supply adequate N to a crop without over-applying P. However, P is relatively stable and under a normal agricultural practice, will not leach into groundwater beneath an application site, as excess N is known to do in the nitrate form. The primary means by which P leaves an agricultural site is through erosion caused by stormwater runoff. A viable nutrient management plan for P is farming in a manner that conserves soil by reducing, if not eliminating, runoff potential. The topography of most of the land application area managed by CDI has less than two (2) percent slope, with much of the area having no appreciable slope. Runoff reduction via vegetated buffers is the primary mechanism employed by CDI to manage P.

## **BACTERIOLOGY**

Potential pathogenicity of wastewater and wastewater residual of human origin are of major concern, and can limit, if not eliminate, the possibility of utilizing solid or liquid wastewater residuals. Waterborne disease is a major cause of disease globally, including in the United States. CDI is required to qualify the safety regarding possible pathogen contamination by examining the level of pathogen indicator organism (fecal Coliform), and ensure each facility where they accept material is using a process to significantly reduce pathogens. Additional site restrictions are required and implemented to prevent public health hazards. These include prevention of public access, growing crops that will not be directly consumed by humans, forbiddance domestic animals to graze, and a recovery period in which the farmland cannot revert to foods for human consumption for a period of three (3) years after the last application of wastewater residuals.

In addition to prequalifying wastewater residual as satisfying the PSRP requirement and subjecting the material to periodic bacterial examination, CDI must also apply the residuals in a manner that vectors, such as insects, birds, and other animals, cannot feed on and ultimately transfer the residuals from the application site. This is generally accomplished by injecting the residual below the ground surface; surface application of the residual and incorporation into the soil by plowing or disking; or by increasing the pH (lime stabilization) to a level of 12, making the residual unattractive to vectors but still safe to use agriculturally.

Based on a performance review of CDI history (30 years) on the two (2) existing land treatment farms (Harbeson Tract and Milton Farm), nutrients are the land limiting constituent. Bacteriological constituents (groundwater sampling) and heavy metals (soil sampling) are not identified as a concern with environmental compliance given the history of groundwater and soil sampling on the other nearby farms. Nutrient loading will be monitored as per the permit in soil sampling and monitoring well requirements. CDI is under a Land Ownership/Farm Lease Agreement with the property ownership, Wayne Hudson.

### **3.3 CONCLUSION**

The project areas are comprised of somewhat well and well drained (vast majority) soils with average SHWT equal to or greater than five (5) feet beneath the surface. Based on review of current information, and information provided in the 2016 PDR, prepared by ARM, Inc., the project area is well suited, given the State's regulatory criteria for the land treatment of sanitary and non-sanitary wastes.

## **4.0 100 YEAR FLOOD ELEVATION**

Documented in 2016 PDR.

## **5.0 EXISTING VEGETATIVE COVER**

The land treatment areas are open agricultural lands/fields. The remainder of the parcels consist of existing site improvements, farm ponds / old borrow pits, woods, and portions of fields used strictly for agricultural. See landscape site photographs in Appendix E.



## **6.0 PRESENT LANDOWNERS**

Unchanged since the 2016 PDR.

## **7.0 PLAN OF OPERATION AND MANAGEMENT**

The operation involves the land application of stabilized wastewater sludge from Wastewater Treatment Facilities in Delaware, and other land treatable wastes approved by the DNREC (e.g., sanitary wastes, restaurant grease trap waste, poultry fat, dissolved air flotation solids, spent food brine, and brewery waste) as part of normal agricultural activities. Treatment involves the screening of the liquid residual to remove trash and other large non-treatable materials for landfill disposal. The lime stabilization plant permitted in 2015 (WPCC 3011/15) provides storage for septage, septage holding tanks and small volume wastewater treatment facility liquid sludge after it has been satisfactorily treated. Documentation is on file with DNREC, as follows:

Per the Permit Approved by DNREC, the Lime Stabilization Plant, includes: one (1) four-foot (4') by four-foot (4') tank with bar screen; one (1) Siemens 5100W magnetic flow meter with six hundred (600) gallon per minute capacity; one (1) Lakeside Raptor Unit; one (1) trash dumpster; one (1) fourteen hundred (1,400) gallon Grit Chamber Tank; two (2) six thousand (6,000) gallon mixing tanks with four (4) integral WS\_D3Series Model 3888D3 Goulds pumps; valves; interconnecting three-inch (3"), four-inch (4") and six-inch (6") diameter pipes and related facilities as located at the Milton Farm Operation Facility on Isaacs Road (DE Route 30), north of Milton Highway, Milton, Broadkill Hundred, Sussex County, Delaware. The plant significantly reduces vectors for pathogens, and pests contacting the septage/wastes.

The screened residual liquid is then mixed with premixed lime (CaOH) slurry while flowing by gravity to one of two below-ground forty-four hundred (4,400) gallon holding tanks. The pH of the mixed liquid is checked to ensure attainment to a pH of twelve (12) standard units or greater.

Additional lime slurry is added if the pH falls below twelve (12). The liquid may be recalculated using a pump to ensure mixing if necessary.

After the two (2) hour stabilization requirement is met, the treated lime stabilized sludge is pumped into an existing 194,400± gallon storage tank. The tank provides adequate storage for the current operation. Several factors affect the storage capacity in the storage tank. Land application of thickened sludge from the bottom of the tank, and spray irrigation of treated supernatant, enables additional slurry (solids) storage. Presently, lime stabilized sludge from the storage tank may be land applied at the Milton farm location or trucked and applied at the Harbeson Farm if conditions are favorable.

Land Application Procedures are provided in the 2016 PDR.

A secondary method approved on the Milton Farm involves the application of lime stabilized septage via a traveling sprinkler gun. Application parameters are as follows: maximum application rate of one-half (0.5) acre-inch of supernatant per week; instantaneous hydraulic loading rate shall not exceed 0.25 inches per acre per hour; septage supernatant application rates are limited to two hundred seventy thousand (270,000) gallons per acre per year, or the nitrogen requirement of the crop (whichever is reached first). Septage supernatant may only be spray irrigated onto Milton Farm Fields one (1), two (2) and four (4) without written Department approval. Septage shall be applied evenly amongst spray zones in each approved field. Septage shall not be applied when

wind speed exceeds ten (10) miles per hour (mph), or wind gust exceed 15 mph. An anemometer and windsock are utilized to confirm proper wind conditions prior to applying septage.

Solid wastewater sludge, passing either the USEPA paint filter test, or composed of greater than twenty percent (20%) solid content may be temporarily stored on site (1 week / 7 days or less). Any solid wastewater sludge must be stored on an impervious surface with covering available. Said storage area must be located minimum five hundred (500) feet from a public road and/or private residence. Collection of any stormwater from the stockpile area will be managed in a BMP (i.e., vegetated infiltration basin/swale).

In cooperation with the Farmer and Nutrient Management Consultant, residuals are applied based on the nutrient content, in preparation for planting a crop that will reclaim as much nutrient as is applied. Biosolids/Sludge application is not a constant activity, and is done over a narrow period, in any one area of a site. Partially applied areas become vegetated with no-crop vegetation during the period it takes to load a field with its agricultural nutrient goal.

CDI's SOP for Land Application of Multiple Wastes, and Spray Field Application are provided in Appendix F.

CDI has access to septage and other non-hazardous waste disposal facilities of Wastewater Treatment Plants (Kent County, Delcora in Chester, PA). CDI has the capability of discharging septage to other facilities if spray irrigation or sludge land application is not feasible. For this reason, there would be no specific requirement to provide additional storage as part of the septage land application facility.

The land application sites will be operated in a manner to minimize dust, odor, noise, and other potential nuisances. The operation; however, is like any other agricultural type of operation; therefore, occasional nuisances occur. Every effort is made to minimize their occurrence. CDI has operated at the Milton site since the early 1980's, with the addition of the other land application site in operation since the early 1990's.

Vehicular traffic is confined to normal business hours. The agricultural aspect of growing row crops on the biosolids-amended lands is a seasonal activity, concentrated at planting and harvest times. There may be associated increased truck traffic as part of the periodic harvest agricultural activity.

The lime stabilization facility attenuates any odors generated by handling unstabilized waste. Other wastes stabilized at the point of origin are relatively odor free. Care is taken to ensure materials are stored for a minimum period to prevent odor. However, the nature of the waste material handled may have occasional odor associated with them. The methods used for treatment to reduce vectors (lime stabilization, injection, or surface application with incorporation) serve to reduce odors.

CDI has been using the BARRS (see Appendix B) to record current, past, and future crop records, and records of residuals application. The following information has been gathered and incorporated into this document to both utilize the BARRS report as a useful tool, and to present CDI's crop management plan. Site inspections are currently conducted on a periodic basis, and when deemed necessary on the existing farms CDI is operating.

In addition to maintaining crop and application rates, soil analysis is routinely performed under the direction of DNREC. Several additional measures are characterized in the Introduction Section of this report.

This Operation and Maintenance Plan will coincide with the Nutrient Management Plan. An operational record shall remain available on the site. This record documents the dry and wet weight of the sludge to be applied, any

major deviations from the plan, general daily conditions, application rates, management of nutrients, frequency of irrigations, and techniques utilized, among other factors. These records and guidance documents are compiled in the Nutrient Management Plan and Plan of Operation and Management, a dual document. These documents guide the operator(s) to apply the wastes at agronomic rates, and in accordance with regulatory standards.

Regular groundwater sampling (i.e., bacteriological, nutrient, conductance) is performed in a monitoring well network to ensure the site meets State and Federal surface groundwater quality requirements. Per the *Methods of Soil Analysis*, published by the American Society of Agronomy, soil sampling is conducted under the Permit to monitor the following:

pH S.U.	Cadmium
Nitrogen as N	Chromium
Total Phosphorus as P	Copper
Potassium	Lead
Aluminum	Mercury
Iron	Molybdenum
Arsenic	Nickel
Zinc	Selenium
% organic matter	

If warranted or requested, CDI has agreed to meet with a committee of neighbors following the regular sampling protocol, and submittal of the monitoring results to DNREC.

## **9.0 VEGETATION MANAGEMENT PLAN, EROSION CONTROL, AND BEST MANAGEMENT PRACTICES**

Documented in the 2016 PDR.

## **10.0 PEST MANAGEMENT PLAN**

Documented in the 2016 PDR.

## **11.0 QUALITY ASSURANCE / QUALITY CONTROL PLAN**

The operation involves the transportation of stabilized wastewater sludge from Wastewater Treatment Facilities in Delaware, and the transportation of stabilized septage, holding tank waste, and minor Wastewater Treatment Facility sludge, treated at the Milton site, to the approved sites for application at agronomic rates. Wastewater Treatment Residuals, already satisfactorily treated by a PSRP, and non-hazardous residuals containing no sanitary waste component are land applied without lime stabilization, if approved by DNREC.

Stabilized Wastewater Treatment Facility sludge and lime stabilized sludge will be delivered to the approved sites in accordance with Delaware Waste Transporters Permit Number WH-13, where it will be land applied at agronomic rates. Dewatered sludge will be surface applied and mechanically incorporated within six hours of application. Liquid sludge will be applied either by means of surface application or by subsurface injection. Liquid

sludge that is surface applied shall be incorporated mechanically within six hours of application. Non-hazardous residuals containing no sanitary waste that are to be land applied will be treated as the above residuals. Surface applied waste does not need to be incorporated mechanically if applied to a continual grass crop, unless otherwise directed by the DNREC.

CDI shall routinely monitor and record all information relative to the stabilization, or other processing of the biosolids and residuals. They shall provide a waste sampling plan addressing:

- Sampling equipment, personnel, and containers, including setup, tear-down and cleaning procedures
- Representative sampling (collection points, composting method, frequency, and timing of sampling)
- Sample preservation
- Recordkeeping/logbook
- Transfer and chain-of-custody samples

Testing methods used shall be as identified in the publications listed in Part III, (B), Section 1000 of the *Guidance and Regulations Governing the Land Treatment of Sludge in Delaware*. All laboratory results shall list the method used for analysis.

The purpose of the QA/QC plan is to assure product consistency is maintained, and the process of land application is consistently in regulatory compliance. The waste products will be continually monitored and recorded on a form approved by DNREC. To maintain consistency, CDI will routinely monitor the composition of the wastes to be applied. These documents will be part of the annual operation report.

By adhering to the regulations and plans set forth and established by the PDR on the two (2) Farms, CDI can assure QA/QC. A yearly QA/QC will be conducted by DNREC with the review of the annual report. Supplemental QA/QC efforts may be established by DNREC. Coordination with criteria to be provided on a basis greater than one year intervals must be verified with the applicant.

## **REFERENCES**

The following documents, publications, maps, etc., were used as source materials for this report:

- 2016 PDR, prepared by ARM, Inc.
- FEMA'S National Flood Hazard Layer (NFHL) Viewer: <https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd>
- Sussex County Delaware, Online Mapping: <https://maps.sussexcountye.gov/OnlineMap/Map.html>
- Sussex County Delaware Property Records: <https://property.sussexcountye.gov>; <https://maps.sussexcountye.gov/OnlineMap/Map.html>; <https://sussexcountye.gov/recorder-deeds>
- The Delaware Geological Survey: <https://www.dgs.udel.edu/>
- USDA, NRCS, Web Soil Survey: <https://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

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# **APPENDIX A**

## **LETTER OF INTENT**

### **APPLICATION FOR THE LAND TREATMENT OF WASTE PRODUCTS**

#### **FARM LEASE AGREEMENTS**

#### **EXISTING AGU PERMIT 1702-S-03**

#### **DELAWARE WASTE TRANSPORTERS PERMIT APPLICATION**

#### **DNREC LIST OF APPROVED LAND APPLICATION MATERIALS**

#### **LOCATION MAPS**

#### **REPRODUCTIONS OF SUSSEX COUNTY TAX MAPS**

#### **USGS QUADRANGLES**

#### **USDA-NRCS SOIL SURVEYS**

#### **REPRODUCTIONS OF DNREC NAVMAP**

**Clean Delaware, LLC**  
**P.O. Box 123**  
**Milton, DE 19968**

June 2, 2021

Dept. of Natural Resources & Environmental Control  
Brian Churchill  
Surface Water Discharge Section  
89 Kings Highway  
Dover, DE 19901

Re: AGU 1702-S-03

Dear Brian,

I am submitting this letter with the intent to renew Clean Delaware's Land Application permit AGU 1702-S-03.

Clean Delaware is utilizing the services of Scaled Engineering and Keen Consulting to put together a Project Development Report to accompany our application.

As we proceed with our due diligence we look forward to working with your department to address all concerns and provide guidance. Our intension is to continue with a business model that is compliant and sustainable.

Sincerely,

Gerry Desmond  
Clean Delaware, LLC





## APPLICATION FOR A PERMIT TO UTILIZE AND STORE WASTEWATER SLUDGE IN DELAWARE

According to Part III, B. of the Departments Guidance and Regulations Governing the Land Treatment of wastes (<http://regulations.delaware.gov/AdminCode/title7/7000/7100/7103.pdf>), a permit application shall consist of the initial application form specified by the Department combined with a Project Development Report (PDR) containing any supplementary information and analysis necessary to enable the Department to review the proposed project to determine if it is consistent with Delaware law and regulation. An application shall demonstrate how the applicant plans to comply with the applicable requirements of Department regulations, as well as any additional operating requirements set forth in these regulations that are specifically applicable to the particular type of operation that is proposed.

### PRELIMINARY INFORMATION

1. Name of facility: Clean Delaware, LLC

Mailing address: P.O. Box 123 Milton, DE 19968

Location (street address, if different from mailing address):  
13917 Isaacs Rd. Milton, DE 19968

2. Name of contact: Gerry Desmond

Mailing address: 16626 John Rowland Trail Unit 603 Milton, DE 19968

Telephone number: 302-684-4221

3. **Description of Sewage Sludge Use or Disposal Practices.** Provide the following information on the quantity (total dry metric tons per year) of sewage sludge handled or proposed to be handled at the applicant's facility:

Amount of sewage sludge:

70 dmt generated at the facility:  
200 dmt received from off-site:  
270 dmt land applied:  
\_\_\_\_\_ sent off-site for land application:  
\_\_\_\_\_ sent off-site for further treatment or distribution  
\_\_\_\_\_ for ultimate land application:  
\_\_\_\_\_ used or disposed of by a method not described above,  
including sewage sludge sent to a municipal solid  
\_\_\_\_\_ waste landfill (explain below):

4. **Sludge Quality Data.** Attach sewage sludge data for the parameters listed in Section 117.2 of the Department's Guidance and Regulations Governing the Land Treatment of Wastes, pathogen reduction information in accordance with Sections 132-134, and vector attraction reduction information in accordance with Section 135.

5. Is this permit application being completed by a representative of the wastewater treatment facility? If no, list the relation of the entity completing the permit application (e.g. the operator or a separate company interested in utilizing sewage sludge).

☒ Yes ☐ No If no, please explain \_\_\_\_\_

6. Indicate type of facility:

☐ Federally owned treatment works

☒ Privately owned treatment works

☐ Publicly owned treatment works (POTW)

If a POTW, provide the following:

Total population served: \_\_\_\_\_

Design influent flow (MGD): \_\_\_\_\_

☐ Other \_\_\_\_\_

7. Applicants NPDES Permit Number (if applicable) N/A

8. Does this applicant perform any collection, treatment, storage, application to land, or disposal of sewage on Indian Lands?

☐ Yes ☒ No

9. Provide a topographic map (or other appropriate map if a topographic map is unavailable) that shows the following three items of information. Include the area one mile beyond all property boundaries of the applicants facility (submit as many maps as necessary to show the entire area). See PDR

- Location of sewage sludge management facilities (including on-site disposal sites).
- Location of all water bodies.
- Location of wells used for drinking water listed in public records or otherwise known to the applicant within 1/4 mile of the property boundaries.

10. Other Requirements:

- List all Federal, State, and local permits or construction approvals received or applied for that are not described above that regulate sewage sludge management practices used by this applicant.

N/A

- Submit, with the application information, any other information that the permitting authority requests to assess sewage sludge use and disposal practices or identify appropriate requirements.

## SECTION A. SEWAGE SLUDGE GENERATION OR PREPARATION

Complete Section A if the applicant generates sewage sludge or derives material from sewage sludge.

### A.1. Sewage Sludge Use and Disposal

- a. Total dry metric tons per year generated 70 dmt
- b. Total dry metric tons per year received from off site \_\_\_\_\_

If sewage sludge is received from off-site, list the owner and NPDES permit number (if applicable) of the off-site facility. Also list the quantity (total dry metric tons per year) of sewage sludge received from each source (attach additional pages if necessary).

Owner: \_\_\_\_\_  
NPDES Permit Number: \_\_\_\_\_  
Quantity: \_\_\_\_\_

### A.2. Off-Site Treatment or Distribution. To be completed if the applicant sends sewage sludge to another facility for treatment or distribution prior to application to the land.

- a. Total dry metric tons per year sent to receiving facility by the applicant \_\_\_\_\_
- b. Name and address of facility to which sewage sludge is sent

Name \_\_\_\_\_  
Address \_\_\_\_\_

- c. Which class of pathogen reduction (if any) is met by the sewage sludge before it leaves the applicant's facility? \_\_\_\_\_

Describe the process(es) (if any) used to meet this class of pathogen reduction. \_\_\_\_\_

- d. Which of the following vector attraction reduction requirements (if any) is met by the sewage sludge before it leaves the applicants facility?

- \_\_\_\_\_ Minimum 38 percent reduction in volatile solids  
\_\_\_\_\_ Anaerobic process, with bench-scale demonstration  
\_\_\_\_\_ Aerobic process, with bench-scale demonstration  
\_\_\_\_\_ Specific oxygen uptake rate (SOUR) for aerobically digested sludge  
\_\_\_\_\_ Aerobic processes plus raised temperature  
\_\_\_\_\_ Raise pH to 12 and retain at 11.5  
\_\_\_\_\_ 75 percent solids with no unstabilized solids  
\_\_\_\_\_ 90 percent solids with unstabilized solids  
\_\_\_\_\_ Other, explain. \_\_\_\_\_

Describe the process(es) used to meet this vector attraction reduction requirement. \_\_\_\_\_



e. Check all activities performed by the receiving facility on the applicants sewage sludge (if applicable).

- ☐ Dewatering
- ☐ Composting
- ☐ Stabilization
- ☐ Pathogen reduction
- ☐ Vector attraction reduction
- ☐ Blending with sewage sludge from other treatment works
- ☐ Addition of bulking materials (wood chips, sawdust, manure)
- ☐ Placement in bag or other container
- ☐ Sale or give-away to public
- ☐ Other

Describe the activities identified above. Attach a copy of all labels or notices that accompany the product.

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**A.3.** To be completed if the applicant **processes or packages sewage sludge for sale or give-away in a bag or other container for application to land** (Distribution and Marketing permits)

- a. Provide the total dry metric tons per year processed or packaged for sale or give-away in a bag or other container for application to land. \_\_\_\_\_
- b. Indicate which class of pathogen reduction is met by the sewage sludge processed or packaged for sale or give away in a bag or other container for application to land. \_\_\_\_\_

Describe the process(es) used to meet this class of pathogen reduction. \_\_\_\_\_

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Are all processes used to meet this class of pathogen reduction provided by the applicant?

☐ Yes ☐ No

If no, explain. \_\_\_\_\_

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c. Which of the following vector attraction reduction requirements is met by the sewage sludge processed or packaged for sale or give away in a bag or other container for application to land?

- ☐ Minimum 38 percent reduction in volatile solids
- ☐ Anaerobic process, with bench-scale demonstration
- ☐ Aerobic process, with bench-scale demonstration
- ☐ Specific oxygen uptake rate (SOUR) for aerobically digested sludge
- ☐ Aerobic processes plus raised temperature
- ☐ Raise pH to 12 and retain at 11.5
- ☐ 75 percent solids with no unstabilized solids
- ☐ 90 percent solids with unstabilized solids
- ☐ Other, explain. \_\_\_\_\_

Describe the process(es) used to meet this vector attraction reduction requirement. \_\_\_\_\_

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Are all processes used for vector attraction reduction provided by the applicant?

\_\_\_\_\_ Yes \_\_\_\_\_ No

If no, explain: \_\_\_\_\_

- d. Briefly describe any blending or manufacturing processes employed prior to sale or give away in a bag or other container.

\_\_\_\_\_

- e. Attach a copy of all labels or notices that accompany the product being sold or given away.

**A.4.** To be completed if sewage sludge from this facility is **applied to land** (Agricultural Utilization permits).

- a. Provide the total dry metric tons per year from this facility applied or proposed to be applied and list each land application site

<u>Amount</u>	<u>Land Application Site</u>
<u>70 DMT</u>	<u>see PDR an BARRS report "SEPTAGE"</u>
_____	_____
_____	_____

- b. Have all land application sites been identified at the time of permit application?

X Yes \_\_\_\_\_ No

If no, submit a copy of the land application plan with this application information. Complete Section B only for Class B land application sites identified at the time of permit application.

## SECTION B. LAND APPLICATION (Agricultural Utilization Permits for Class B Sludge)

Complete Section B if the applicant seeks a permit to apply sewage sludge to land.

**B.1. Amount of Sewage Sludge Applied to Land Application Site.** Provide the total dry metric tons per hectare per year applied to this site. 3.4

**B.2. Site Information.**

a. Provide the name (if any) and street address of this land application site.

Name see PDR and BARRS report  
Address \_\_\_\_\_

b. Provide the size of the land application site in hectares. 78.5

c. Federal, State, and local permit number(s) applicable to this land application site (attach additional pages if necessary).

<u>Permit Number</u>	<u>Type of Permit</u>
<u>AGU 1702-S-03</u>	<u>Agricultural Utilization of Sludge and Waste products DE</u>
_____	_____
_____	_____

d. Is this site owned/operated by the applicant?  
\_\_\_\_\_ Yes X No

e. What is the concentration of total nitrogen (as N on dry weight basis) in the bulk sewage sludge applied to this land application site? see Barrs report for specific products

**B.3. Person that Land Applies the Sewage Sludge.** Sewage sludge is applied to the site by:

X Facility generating the sewage sludge  
X Site owner/operator  
\_\_\_\_\_ Other

Provide the name and address of the person that applies sewage sludge to this site.

Name Gerry Desmond  
Address 16626 John Rowland Trail Unit 603 Milton, DE 19968

**B.4. Type of Land Application Site**

X Agricultural  
\_\_\_\_\_ Forest  
\_\_\_\_\_ Public contact  
\_\_\_\_\_ Reclamation site  
\_\_\_\_\_ Lawn or home garden  
\_\_\_\_\_ Other \_\_\_\_\_



**B.5. Vegetation Grown on Site.**

- a. What type of vegetation is grown on this site? Corn, Soybean, Wheat
- b. What is the nitrogen requirement for this vegetation? 1.0, 3.8, 1.3 lbs per acre

**B.6. Other facilities.** Is sewage sludge sent to this land application site by any facilities other than the applicant's facility?

☒ Yes ☐ No

If yes, provide the names and addresses of other persons that send sewage sludge to the site.

Name see Monitoring Data Sheets attached to BARRS report

Address \_\_\_\_\_

**B.7. Sewage Sludge Applied to Land in a Different State.** Is this land application site located in a State other than the State where the sewage sludge is generated or the material is derived from sewage sludge?

☐ Yes ☒ No

If yes, describe how the applicant plans to notify the permitting authority for the State where the land application site is located. \_\_\_\_\_

**B.8. Land Application Cumulative Pollutant Loading Rates.** Is this sewage sludge applied to land subject to cumulative pollutant loading rates?

☒ Yes ☐ No

If yes, have the cumulative pollutant loading rates of each applicable pollutant in the sludge been determined?

☒ Yes ☐ No

If yes, provide the allotment remaining for the following pollutants (in kilograms per hectare).

<u>75</u> Arsenic	<u>840</u> Lead	<u>420</u> Nickel
<u>85</u> Cadmium	<u>57</u> Mercury	<u>100</u> Selenium
<u>3000</u> Chromium	<u>75</u> Molybdenum	<u>7500</u> Zinc
<u>4300</u> Copper		

**B.9. Pathogen Reduction.**

- a. Which class of pathogen reduction is met by the sewage sludge applied to this site? see BARRS report
- b. Describe the process(es) used to meet this class of pathogen reduction. see BARRS pathogen and vector sheet
- c. Are all processes used to meet this class of pathogen reduction provided by the applicant?

☒ Yes ☐ No

If no, explain. \_\_\_\_\_

**B.10. Vector Attraction Reduction.**



a. Which of the following vector attraction reduction requirements is met by the sewage sludge applied to this site?

- ☐ Minimum 38 percent reduction in volatile solids
- ☐ Anaerobic process, with further bench-scale demonstration
- ☐ Aerobic process, with further bench-scale demonstration
- ☐ Specific oxygen uptake rate (SOUR) for aerobically digested sludge
- ☐ Aerobic processes plus raised temperature
- ☒ Raise pH to 12 and retain at 11.5
- ☐ 75 percent solids with no unstabilized solids
- ☐ 90 percent solids with unstabilized solids
- ☒ Injection below land surface
- ☒ Incorporation into soil within 6 hours
- ☐ Covering active sewage sludge unit daily
- ☐ Other, explain. \_\_\_\_\_

b. Describe the process(es) used to meet this vector attraction reduction requirement. \_\_\_\_\_  
see PDR

c. Are all processes used for vector attraction reduction provided by the applicant?

☒ Yes ☐ No

If no, explain. \_\_\_\_\_

## SECTION C. SLUDGE STORAGE

Complete Section C if the applicant proposes to store sludge in Delaware.

C.1. Is the application requesting a temporary or permanent sludge storage permit.

☒ Temporary ☐ Permanent

C.2. The applicant shall submit all applicable information required in 7 Del. Admin. C. §7103-150 of Delaware's "Guidance and Regulations Governing the Land Treatment of Waste", Part III, B., "Land Treatment of Sludges and Sludge Products" <http://regulations.delaware.gov/AdminCode/title7/7000/7100/7103.pdf> with the submittal of this permit application in their project development report.

## SECTION D. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

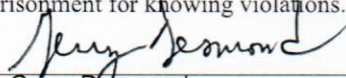
Signature of Officer:

Name of Officer:

Official Title of Officer:

Telephone Number:

Date Signed:



Gerry Desmond

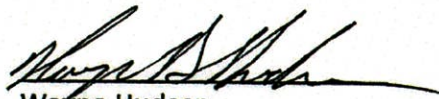
Vice President and General manager

302-686-4221

11/23/21

## LAND USE AGREEMENT

I, Wayne Hudson, trustee, owning 146 acres located on State Route 16 in Milton,  
Delaware, give permission to Clean Delaware, LLC to land apply organic waste to this property.



Wayne Hudson  
W & B Hudson Family Ltd Ptnr

  
Witness

10.26.2011  
Date

PARID: 235-14.00-1.00  
W B HUDSON FAMILY LTD PTNR

ROLL: RP  
13007 ISAACS RD

Property Information

Property Location:	13007 ISAACS RD
Unit:	
City:	MILTON
State:	DE
Zip:	19968
Class:	AGR-Agriculture
Use Code (LUC):	AH-AG W/ HOMESITE
Town	00-None
Tax District:	235 – BROAD KILL
School District:	6 - CAPE HENLOPEN
Council District:	3-Schaeffer
Fire District:	85-Milton
Deeded Acres:	38.1401
Frontage:	0
Depth:	.000
Irr Lot:	
Zoning 1:	RPC-RESIDENTIAL PLANNED COMMUNITY
Zoning 2:	-
Plot Book Page:	/PB
100% Land Value:	\$9,600
100% Improvement Value	\$5,700
100% Total Value	\$15,300

Legal

Legal Description	E/RT 30 3060'N/RT 16
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Owners

Owner	Co-owner	Address	City	State	Zip
W B HUDSON FAMILY LTD PTNR		24075 MILTON ELLENDALE HWY	MILTON	DE	19968

PARID: 235-14.00-2.00  
W B HUDSON FAMILY LTD PTNR

ROLL: RP

Property Information

Property Location:

Unit:

City:

State:

Zip:

Class:	AGR-Agriculture
Use Code (LUC):	FG-AG IN FAA
Town	00-None
Tax District:	235 – BROAD KILL
School District:	6 - CAPE HENLOPEN
Council District:	3-Schaeffer
Fire District:	85-Milton
Deeded Acres:	
Frontage:	0
Depth:	.000
Irr Lot:	
Zoning 1:	RPC-RESIDENTIAL PLANNED COMMUNITY
Zoning 2:	-
Plot Book Page:	/PB
100% Land Value:	
100% Improvement Value	\$0
100% Total Value	

Legal

Legal Description	E SD HWY TO MILTON FX
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Owners

Owner	Co-owner	Address	City	State	Zip
W B HUDSON FAMILY LTD PTNR		PO BOX 187	MILTON	DE	19968

PARID: 235-14.00-3.00  
W B HUDSON FAMILY LTD PTNR

ROLL: RP  
24047 MILTON ELLENDALE HWY

Property Information

Property Location: 24047 MILTON ELLENDALE HWY  
Unit:  
City: MILTON  
State: DE  
Zip: 19968

Class: AGR-Agriculture  
Use Code (LUC): FH-AG W/ HOMESITE IN FAA  
Town 00-None  
Tax District: 235 – BROAD KILL  
School District: 6 - CAPE HENLOPEN  
Council District: 3-Schaeffer  
Fire District: 85-Milton  
Deeded Acres: 146.0001  
Frontage: 0  
Depth: .000  
Irr Lot:  
Zoning 1: -  
Zoning 2: -  
Plot Book Page: /PB  
  
100% Land Value: \$6,000  
100% Improvement Value \$224,000  
100% Total Value \$230,000

Legal

Legal Description RD MILTON TO  
ELLENDALE  
FX

Owners

Owner	Co-owner	Address	City	State	Zip
W B HUDSON FAMILY LTD PTNR		24075 MILTON ELLENDALE HWY	MILTON	DE	19968

PARID: 235-14.00-60.00  
W B HUDSON FAMILY LTD PTNR

ROLL: RP

Property Information

Property Location:

Unit:

City:

State:

Zip:

Class:	AGR-Agriculture
Use Code (LUC):	FG-AG IN FAA
Town	00-None
Tax District:	235 – BROAD KILL
School District:	6 - CAPE HENLOPEN
Council District:	3-Schaeffer
Fire District:	85-Milton
Deeded Acres:	
Frontage:	0
Depth:	.000
Irr Lot:	
Zoning 1:	C-1-GENERAL BUSINESS
Zoning 2:	RPC-RESIDENTIAL PLANNED COMMUNITY
Plot Book Page:	/PB
100% Land Value:	
100% Improvement Value	\$0
100% Total Value	

Legal

Legal Description	RD MILTON TO ELLENDALE FX
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Owners

Owner	Co-owner	Address	City	State	Zip
W B HUDSON FAMILY LTD PTNR		PO BOX 187	MILTON	DE	19968



## LAND USE AGREEMENT

I, Wayne Hudson, trustee of the Estate of F. Olivia Hudson, owning 32 acres located on County Route 9 in Harbeson, Delaware, give permission to Clean Delaware, LLC to land apply organic waste to this property.

  
Wayne Hudson

  
Witness

10.26.2011  
Date

PARID: 235-30.00-62.00  
HUDSON WAYNE D JACQUELINE H

ROLL: RP  
26504 LEWES GEORGETOWN HWY

Property Information

Property Location: 26504 LEWES GEORGETOWN HWY  
Unit:  
City: HARBESON  
State: DE  
Zip: 19951

Class: AGR-Agriculture  
Use Code (LUC): AH-AG W/ HOMESITE  
Town 00-None  
Tax District: 235 – BROAD KILL  
School District: 1 - INDIAN RIVER  
Council District: 3-Schaeffer  
Fire District: 85-Milton  
Deeded Acres: 29.6001  
Frontage: 0  
Depth: .000  
Irr Lot:  
Zoning 1: AR-1-AGRICULTURAL/RESIDEINTIAL  
Zoning 2: -  
Plot Book Page: /PB  
  
100% Land Value: \$148,000  
100% Improvement Value \$23,000  
100% Total Value \$171,000

Legal

Legal Description HWY GEO TO LEWES  
  
SPEC COMM LIEN

Owners

Owner	Co-owner	Address	City	State	Zip
HUDSON WAYNE D JACQUELINE H	MCCABE TRUSTEES	200 ESHAM AVE	BERLIN	MD	21811



AUTHORIZATION TO OPERATE A LAND TREATMENT SYSTEM  
FOR THE

AGRICULTURAL UTILIZATION OF SLUDGE AND WASTE PRODUCTS

1. Pursuant to the provisions of 7 Del. C., §6003

Clean Delaware, LLC.  
P. O. Box 123  
Milton, Delaware 19968-0123

is hereby granted a permit to operate a land treatment system for:

- the agricultural utilization of stabilized sludge generated in the treatment of wastewater in Delaware and other land treatable wastes approved by the Department of Natural Resources and Environmental Control;
- the agricultural utilization of lime stabilized septage and holding tank waste; and,
- approved wastewater treatment residuals.

This permit is limited to the application of above materials to the application site(s) designated in this permit.

2. The application rates, monitoring requirements and other permit conditions are set forth in Parts I, II and III hereof.

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Bryan A. Ashby, Program Manager  
Surface Water Discharges Section  
Division of Water  
Department Of Natural Resources  
and Environmental Control

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Date Signed

## Part I

### GENERAL DESCRIPTION OF OPERATION

The operation involves the transportation of approved stabilized wastewater sludge from wastewater treatment facilities in Delaware and other approved land treatable wastes/residuals approved by the Department of Natural Resources and Environmental Control (e.g. brewery waste and dairy product waste), to the approved sites listed in this permit, for agricultural utilization at agronomic rates. In addition, this operation involves the transportation of approved septage, holding tank waste, and minor wastewater treatment facility sludge to the Milton Farm lime stabilization plant. After treatment in the lime stabilization plant, the aforementioned wastes may be applied to field two of the Milton Farm at agronomic rates.

Stabilized wastewater treatment facility sludge, septage, and wastes shall be delivered to the approved sites in accordance with a valid Delaware waste transporters permit. Sludge and/or waste will be applied either by means of surface application with incorporation or by subsurface injection. Class B septage shall be surface applied without incorporation in accordance with Part I, A.1 and Part III, A. of this permit.

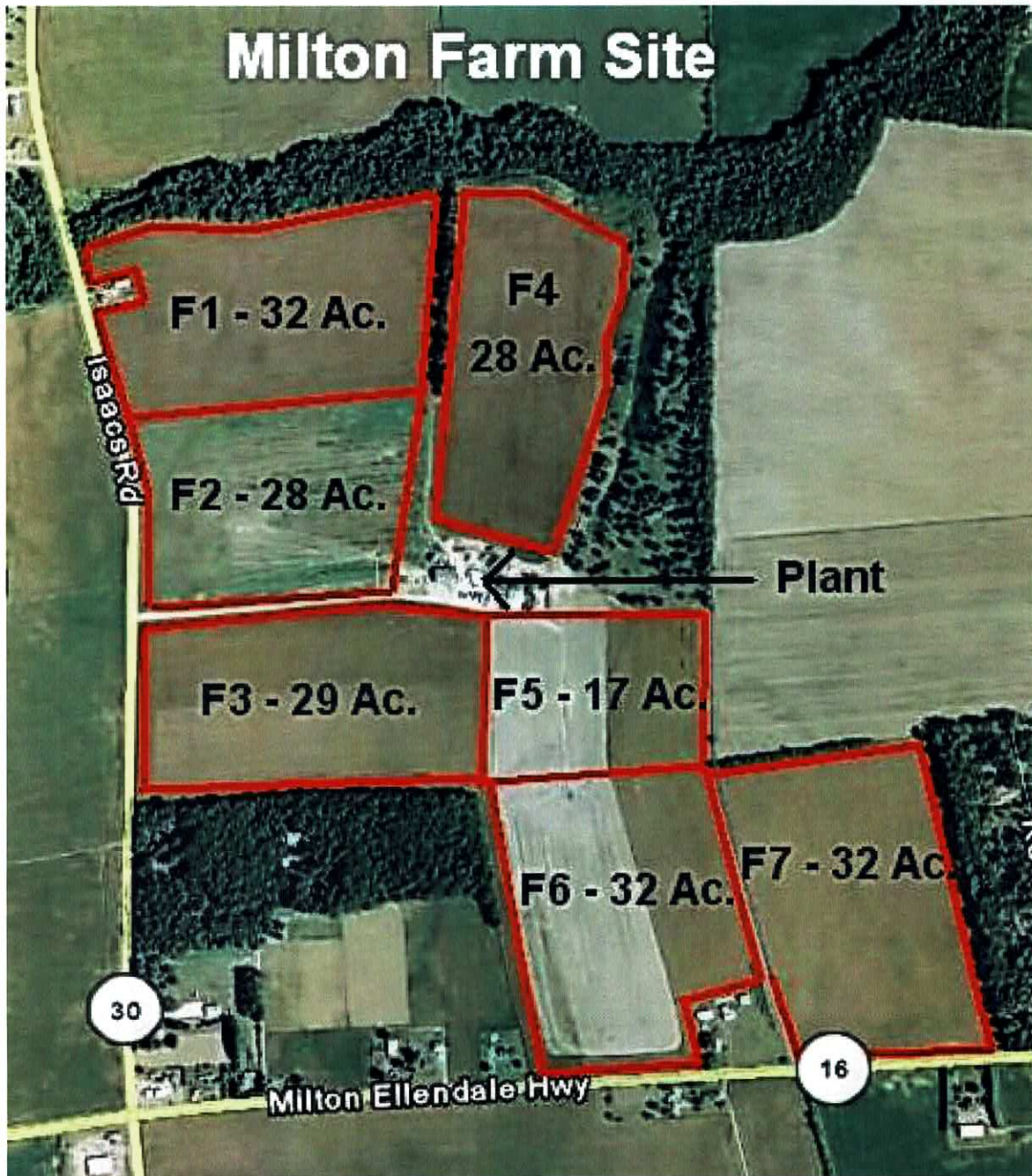
All sludge (septage is included herein as sludge) and any waste products containing pathogenic agents shall be stabilized in accordance with a process cited in Part III, (B), of the Guidance and Regulations Governing The Land Treatment of Wastes.



**SITE LOCATIONS:**

**Milton Farm Site:** This site consists of approximately 216 acres of land located east of Route 30 (Isaacs Road) and north of Route 16 (Milton-Ellendale Highway) approximately 1 mile northwest of Milton.

Tax parcel numbers: 2-35-14.00-1.00, 2-35-14.00-2.00, 2-35-14.00-3.00, 2-35-14.00-60.00



\* Application areas are approximate. Refer to PDR for specific application areas. Buffer zones as specified in Part I, A.1 of this permit shall be maintained when applying materials regulated under this permit.



**The Ellendale Site (New Market):** This site consist of approximately 100 acres (34 acres used for land application) of land located on the south side of Route 231 (Reynolds Pond Road), east of the Sowbridge Branch and approximately 2 miles east of Ellendale.

Tax parcel number: 2-35-6.00-12.00



\* Application areas are approximate. Refer to PDR for specific application areas. Buffer zones as specified in Part I, A.1 of this permit shall be maintained when applying materials regulated under this permit.



**The Harbeson Site:** This site consists of approximately 30 acres of land located on the south side of Route 9, approximately 500 feet east of Route 5.

Tax parcel number: 2-35-30.00-62.00



\* Application areas are approximate. Refer to PDR for specific application areas. Buffer zones as specified in Part I, A.1 of this permit shall be maintained when applying materials regulated under this permit.

## REGULATORY AND SUPPORTING DOCUMENTS:

The land treatment operations shall be conducted in accordance with the following documents:

1. The Department's Guidance and Regulations Governing the Land Treatment of Wastes; Part III, (B), the Land Treatment of Sludges and Sludge Products (revised October 1999);
2. The Department's Guidance and Regulations Governing the Land Treatment of Wastes; Part V, the Land Treatment of Waste Products;
3. Title 40 Code of Federal Regulations, Part 503, Standards for the Use and Disposal of Sewage Sludge;
4. Request for transfer of ownership from Clean Delaware Incorporated to Service Energy, Incorporated dated August 13, 2004. The name of the operating subsidiary under Service Energy shall be, Clean Delaware LLC;
5. The project development report dated September 12, 2011;
6. The list of Department approved products for land application at Clean Delaware, LLC. dated January 1, 2012, or as modified;
7. The request to renew state permit number AGU 1202-S-03 dated June 30, 2016; and,
8. The revised project development report dated November 16, 2016.
9. The request to amend State Permit Number AGU 1702-S-03 dated XXXX.



## A.1 SLUDGE, SEPTAGE AND, WASTE APPLICATION LIMITATIONS

During the period beginning on the effective date and lasting through the expiration date of this permit, the permittee is authorized to operate land treatment sites as identified in this permit for the application of stabilized sludge, septage, and/or wastes at agronomic rates. **The New Market Farm and Milton Farm fields 6 and 7 and cannot be utilized for land application of materials regulated under this permit without written Department approval.**

The timing of sludge application to the site, as well as the quantity and quality of sludge to be land applied shall be specified in a Nutrient Management Plan (NMP) and be in accordance with the below requirements:

Sludge may be applied, up to a rate to meet but the rate shall not exceed the Plant Available Nitrogen (PAN) requirement for the crop(s) grown, as specified in Part III, (B), Section 131.1 of the Guidance and Regulations Governing the Land Treatment of Wastes, Land Treatment of Sludges and Sludge Products. The calculated PAN application rates shall also include any residual mineralized nitrogen from previous sludge application.

A Delaware Department of Agriculture (DDA) Certified Nutrient Consultant shall calculate nutrient loading recommendations. The certified nutrient consultant shall utilize their discretion when determining which samples are representative of the material to be applied onto a specific field.

If supplemental fertilizers are used on those portions of the field which have received sludge, septage and/or waste, the total amount of PAN applied shall not exceed the amounts specified for the crop specified in the NMP.

When any of the limits specified above have been achieved, no additional sludge, septage, and/or waste may be applied to the site unless a supplementary approval has been issued by the Department.

Any individual that land applies materials regulated under this permit shall have a commercial nutrient handler certification through the DDA.

Application of biosolids shall only occur onto one field at a time. Once a field has received up to the nitrogen loading rate in the NMP, within one (1) month the field shall be planted with an appropriate crop as specified in the NMP. Should weather conditions not allow for crop germination, an appropriate crop shall be planted as soon as practicable. Failure to plant a field within the timeframes specified above may result in the Department evoking provisions listed in Part II B. 6 of this permit.

Nutrient uptake from cover crops shall only be credited if the cover crop is harvested.



Fields with "high" phosphorus soil levels (greater than 150 FIV, 150 ppm Mehlich 3, 120 ppm Bray P 1 or 75 ppm Mehlich 1) must have the phosphorus site index (PSI) calculated. Fields with PSI results above "low" levels (greater than 50) must submit the PSI results and a phosphorus management plan to the Department, for review and approval, within sixty (60) days of receipt of the soil analytical data. The phosphorus management plan must demonstrate steps that will be taken to reduce the PSI or phosphorus levels in the soil. Fields with "high" phosphorus soil levels must continue to calculate the PSI at least once every three years until the phosphorus level in the soil is no longer "high". Failure to implement a phosphorous management plan, when applicable, may result in the Department revoking or modifying this permit as outlined in Part II, B.6 of this permit.

Septage supernatant application rates are limited to 270,000 gallons per acre per year or the nitrogen requirement of the crop (whichever is reached first). Septage supernatant may only be spray irrigated onto fields **one (1), two (2) (an area totaling approximately 28 acres), and four (4)** without written Department approval. Septage supernatant hydraulic loading rates shall not exceed ~~4.0~~ **0.5** inches per acre per week, nor shall the instantaneous hydraulic loading rate exceed 0.25 inches per acre per hour. Septage shall be applied evenly amongst ~~the four (4)~~ spray zones **in each approved field.**

**Drinking water treatment iron residual water shall be applied at a rate that does not cause ponding or run off from the application area.**

For any portions of the application area where the depth to seasonal high water table is less than 20 inches but greater than 12 inches, application is limited to May, June, July, and August. Sludge, septage and/or waste shall only be applied when the actual water table depth is at least 20 inches below the maximum depth of tillage as defined in Part I, G. 3 and pursuant to Part III, (B), of the Guidance and Regulations Governing the Land Treatment of Wastes. All observation wells and/or monitoring wells surrounding application fields must be monitored and the results recorded, before land application begins each calendar year and at least monthly during land application activities.

A copy of this permit shall be kept in all land application equipment any time application of materials regulated under this permit occurs and shall be presented to the Department upon request.

## **A.2 OTHER LIMITATIONS**

Only sludge and septage (and waste containing pathogenic agents) which has been treated by a Process to Significantly Reduce Pathogens (PSRP), as defined in Part III, (B), of the Guidance and Regulations Governing the Land Treatment of Wastes, shall be applied to any of the land treatment sites.

For lime stabilized septage, PSRP and vector attraction reduction is achieved when a sufficient amount of lime is added to the septage to reach and maintain a pH of 12 S.U. or greater for a minimum of 2 hours. If at any time during the lime stabilization



process, the pH of the septage falls below 12.0 S.U., the permittee shall add additional lime to raise the pH of the septage to a value of 12.0 S.U. or greater for two full hours. Additionally, the pH of the septage being applied to the field shall be monitored at minimum daily each day application occurs. Only stabilized septage with a pH of 10.5 S.U. or above may be applied under this permit.

A sufficient amount of lime to adjust the soil pH to a value of 6.2 or above shall be applied to the site prior to sludge and/or septage application.

Sludge and/or septage may not be applied when the ground is frozen, saturated or covered with snow or during periods of rain or run-off. Waste application is forbidden during periods of active rain, onto excessively wet ground or onto snow in excess of 2 inches cover. Application of waste to frozen ground may be made provided that no runoff from the application area occurs.

Should short term field staging (7 days or less) of biosolids be necessary, stockpiling may occur only on an impervious surface and the biosolids shall be under cover to prevent runoff onto the surrounding soil. Additionally, the staging site shall be located at least 500 feet from any public road or private residence(s). Staging beyond 7 days requires written Department approval.

Sludge, septage, and waste shall be applied so that the application is uniform.

Surface applied sludge (excluding materials applied from the lime stabilization plant) and waste shall be incorporated into the soil within 6 hours of surface application. **Surface applied waste does not need to be incorporated if applied to a continual grass crop unless directed by the Department (I will tweak this).**

Food crops shall not be harvested for 14 months after application of sewage sludge.

Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after application of sewage sludge when the sewage sludge remains on the land surface for four months or longer prior to incorporation into the soil.

Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of sewage sludge when the sewage sludge remains on the land surface for less than four months prior to incorporation into the soil.

Feed crops and fiber crops shall not be harvested for 30 days after application of sewage sludge.

Animals shall not be allowed to graze on the land for 30 days after application of sewage sludge.

Public access to the sludge and septage application area must be controlled for at least twelve (12) months after application, unless sludge and/or septage has been

treated by an approved process to further reduce pathogens (PFRP).

~~Buffer zones established pursuant to Part III, (B), of the Guidance and Regulations Governing the Land Treatment of Wastes shall be maintained at all times during sludge, septage and/or waste application.~~

**The following minimum application setback distances shall be maintained during waste application:**

	Surface Application	Surface Injection
Occupied off-site dwelling	200 feet	100 feet
Occupied on-site dwelling	100 feet	50 feet
Potable wells	100 feet	100 feet
Non-potable wells	25 feet	25 feet
Public roads	25 feet	15 feet
Property lines	50 feet	25 feet
Streams, tidal waters, or other water bodies	50 feet	33 feet
Drainage ditches	25 feet	25 feet

**Additional Setbacks for the Utilization of Application Equipment that May Create Aerosols:**

The following more conservative setbacks shall be maintained at all times during the application of treated septage and other approved liquid wastes applied utilizing hose reels or other spray application equipment. Application setbacks shall be from the wetted application perimeter.

	Minimum Setback Distance
Public roads	150 feet
Property lines of off-site properties with occupied residential dwellings	500 feet
Any on-site occupied dwelling	500 feet*
Streams, tidal waters, or other water bodies	150 feet

\* Buffer zones may be reduced from 500 feet from the nearest on-site occupied building (buildings located on tax parcel numbers listed in Part 1, "Site Locations" of this permit) with written permission from the property owner. Additionally, written permission from a property tenant, if applicable, is required. Under no circumstances shall the application of septage and other approved liquid wastes applied utilizing hose reels or other spray equipment be less than 250 feet from an occupied on-site dwelling.

The permittee may be required to increase buffer zones from the distances above as determined by the Department.

An anemometer and windsock shall be in place at the Milton Farm at all times.



The permittee shall not apply septage at any time the wind exceeds 10 miles per hour (mph) or wind gusts exceed 15 mph. It is the permittee's responsibility to ensure that any aerosols created by land application activities do not carry beyond the application boundaries of the Milton Farm.

No sludge, septage and/or waste shall be applied if sample analysis yields pollutant concentrations in excess of the following values:

Arsenic	41 mg/kg	Cadmium	39 mg/kg	Chromium	1200 mg/kg	Copper	1500 mg/kg
Lead	300 mg/kg	Mercury	17 mg/kg	Molybdenum	18 mg/kg	Nickel	420 mg/kg
PCB's	10 mg/kg	Selenium	36 mg/kg	Zinc	2800 mg/kg	-	-

### **A.3 — GROUNDWATER LIMITATIONS**

~~Application of sludge/septage and/or waste to the designated fields shall not cause groundwater to be in violation of applicable Federal or State Drinking Water Standards on an average annual basis.~~ **Already in B.7**

## **B. MONITORING REQUIREMENTS**

During the period beginning on the effective date and lasting through the expiration date the permittee is authorized to apply sludge, septage and/or waste at agronomic rates to the application sites listed in this permit. Such applications shall be monitored by the permittee as specified below.

## B.1 LIME STABILIZED SEPTAGE

Parameter	Unit Measurement	Minimum Frequency	Sample Type
Moisture Content	percent	Quarterly	Composite
Total Nitrogen as N (Moist & Dried)	percent	Quarterly	Composite
Organic Nitrogen as N (Moist & Dried)	percent	Quarterly	Composite
Ammonium and Nitrate Nitrogen as N (Moist & Dried)	percent	Quarterly	Composite
pH	S.U.	Quarterly	Composite
Volatile Solids	percent	Quarterly	Composite
Phosphorus as P (dry weight basis)	percent	Quarterly	Composite
Potassium (dry weight basis)	percent	Quarterly	Composite
Arsenic (dry weight basis)	mg/kg	Annually	Composite
Cadmium (dry weight basis)	mg/kg	Annually	Composite
Chromium (dry weight basis)	mg/kg	Annually	Composite
Copper (dry weight basis)	mg/kg	Annually	Composite
Lead (dry weight basis)	mg/kg	Annually	Composite
Mercury (dry weight basis)	mg/kg	Annually	Composite
Molybdenum (dry weight basis)	mg/kg	Annually	Composite
Nickel (dry weight basis)	mg/kg	Annually	Composite
Selenium (dry weight basis)	mg/kg	Annually	Composite
Zinc (dry weight basis)	mg/kg	Annually	Composite
Fecal Coliform (MPN dry wt basis)	colonies/g	Annually	Composite
Calcium (dry weight basis)	mg/kg	Annually	Composite
Magnesium (dry weight basis)	mg/kg	Annually	Composite
Sodium (dry weight basis)	mg/kg	Annually	Composite

Lime stabilized septage samples shall be collected at the following location: the lime stabilized septage storage tank after mixing. All septage samples shall be taken and analyzed in accordance with Part III (B), Section 151 of the Department's Guidance and Regulations Governing the Land Treatment of Wastes. See Part I, F. for reporting requirements.

The Department may modify the sampling frequency based upon review of continuing or additional analyses.

**NOTE:** A list of the 126 priority pollutants can be found in 40 CFR, Part 423, Appendix A.

## B.2 OTHER STABILIZED SLUDGES (Including sludge solids from septage)



Parameter	Unit Measurement	Minimum Frequency	Sample Type
Moisture Content	percent	Every 2 months*	Composite
Total Nitrogen as N (Moist & Dried)	percent	Every 2 months*	Composite
Organic Nitrogen as N (Moist & Dried)	percent	Every 2 months*	Composite
Nitrate Nitrogen as N (Moist & Dried)	percent	Every 2 months*	Composite
Ammonium Nitrogen as N (Moist & Dried)	percent	Every 2 months*	Composite
Phosphorus as P (dry weight basis)	percent	Every 2 months*	Composite
Potassium (dry weight basis)	percent	Every 2 months*	Composite
pH	S.U.	Annually	Composite
Volatile Solids	percent	Annually	Composite
Arsenic (dry weight basis)	mg/kg	Annually	Composite
Cadmium (dry weight basis)	mg/kg	Annually	Composite
Chromium (dry weight basis)	mg/kg	Annually	Composite
Copper (dry weight basis)	mg/kg	Annually	Composite
Lead (dry weight basis)	mg/kg	Annually	Composite
Mercury (dry weight basis)	mg/kg	Annually	Composite
Molybdenum (dry weight basis)	mg/kg	Annually	Composite
Nickel (dry weight basis)	mg/kg	Annually	Composite
Selenium (dry weight basis)	mg/kg	Annually	Composite
Zinc (dry weight basis)	mg/kg	Annually	Composite
Fecal Coliform (MPN dry wt basis)	colonies/g	Annually	Composite
Calcium (dry weight basis)	mg/kg	Annually	Composite
Magnesium (dry weight basis)	mg/kg	Annually	Composite
PCB's (dry weight basis)	mg/kg	Annually	Composite
Sodium (dry weight basis)	mg/kg	Annually	Composite
Priority Pollutant Scan	-----	Every 5 Years	Composite

All sludge samples shall be taken and analyzed in accordance with Part III (B), Section 151 of the Department's Guidance and Regulations Governing the Land Treatment of Wastes. See Part I, F. for reporting requirements. All analytical results must be available at least 15 days or more before application occurs.

\* Lagoon clean out, septage solids, or bulk biosolids application occurring less than every other month shall have at minimum three (3) composite samples collected and analyzed prior to each land application event.

The Department may modify the sampling frequency based upon review of continuing or additional analyses.

**NOTE:** A list of the 126 priority pollutants can be found in 40 CFR, Part 423, Appendix A.

### B.3 WASTES

<u>Parameter</u>	<u>Measurement</u>	<u>Sampling Frequency</u>	<u>Sample Type</u>
Moisture content	percent	Every two months*	Composite
Total Nitrogen as N (dry weight basis)	percent	Every two months*	Composite
Organic Nitrogen as N (dry weight basis)	percent	Every two months*	Composite
Ammonium and Nitrate Nitrogen as N (dry weight basis)	percent	Every two months*	Composite
Phosphorus (dry weight basis)	percent	Every two months*	Composite
Potassium (dry weight basis)	mg/kg	Every two months*	Composite
pH	S.U.	Annually	Composite
Arsenic (dry weight basis)	mg/kg	Every 5 Years	Composite
Cadmium (dry weight basis)	mg/kg	Every 5 Years	Composite
Chromium (dry weight basis)	mg/kg	Every 5 Years	Composite
Copper (dry weight basis)	mg/kg	Every 5 Years	Composite
Iron (dry weight basis)	mg/kg	Every 5 Years	Composite
Lead (dry weight basis)	mg/kg	Every 5 Years	Composite
Mercury (dry weight basis)	mg/kg	Every 5 Years	Composite
Molybdenum (dry weight basis)	mg/kg	Every 5 Years	Composite
Nickel (dry weight basis)	mg/kg	Every 5 Years	Composite
Selenium (dry weight basis)	mg/kg	Every 5 Years	Composite
Zinc (dry weight basis)	mg/kg	Every 5 Years	Composite

\* Lagoon clean out or bulk waste application occurring less than every other month shall have at minimum three (3) composite samples collected and analyzed prior to each land application event.  
The minimum sampling frequency for drinking water treatment residuals is annually.

The Department may modify the sampling frequency based upon review of continuing or additional analyses.



#### **B.4 SLUDGE STABILIZATION PROCESS MONITORING**

- a. Domestic septage shall be lime stabilized to meet Class B (PSRP) requirements, as set forth in Part III, (B) of the Guidance and Regulations Governing the Land Treatment of Wastes, prior to land application. PSRP requirements have been met when a sufficient amount of lime has been added to raise the pH of the septage to 12 S.U., throughout the batch, for a minimum of two (2) hours. pH values are to be taken to the nearest 1/10<sup>th</sup> standard unit and logged every 30 minutes during the two hour lime stabilization process. See Part I, F for reporting requirements.

- b. Other Sludges and Wastes Containing Pathogenic Agents

All sludge prepared for land application at the sites approved in this permit must meet the requirements in Part III, Section 133 of the Guidance and Regulations Governing the Land Treatment of Wastes. The permittee shall obtain monitoring information from the generating facility demonstrating that a sludge source has been prepared to meet one of the requirements for PSRP as found in the regulation. No sludge shall be land applied prior to the acquisition of current stabilization data by the permittee.

#### **B.5 VECTOR ATTRACTION REDUCTION**

Vector attraction reduction for septage is achieved by "pH adjustment over time" and other sludges by subsurface injection or incorporation of surface applied sludge in accordance with Part III, (B), Section 135 of the Guidance and Regulations Governing the Land Treatment of Wastes. Other alternative methods for achieving vector attraction reduction found in section 135 of Part III, (B), of the Guidance and Regulations Governing the Land Treatment of Wastes, may be employed with prior written Departmental approval.

To ensure the odor of the septage remains minimized, the pH of the septage being applied to the field shall be monitored at minimum daily each day application occurs. Only stabilized septage with a pH of 10.5 S.U. or above may be applied under this permit.

## B.6 SOIL MONITORING

<u>Parameter</u>	<u>Measurement</u>	<u>Sampling Frequency</u>	<u>Sample Type</u>
% Organic Matter	percent	Annually	Composite
Total Nitrogen as N (dry weight basis)	mg/kg	Annually	Composite
Phosphorus (dry weight basis)	mg/kg	Annually	Composite
Potassium (dry weight basis)	mg/kg	Annually	Composite
pH	S.U.	Annually	Composite
Aluminum (dry weight basis)	mg/kg	Every 5 Years	Composite
Arsenic (dry weight basis)	mg/kg	Every 5 Years	Composite
Cadmium (dry weight basis)	mg/kg	Every 5 Years	Composite
Chromium (dry weight basis)	mg/kg	Every 5 Years	Composite
Copper (dry weight basis)	mg/kg	Every 5 Years	Composite
Iron (dry weight basis)	mg/kg	Every 5 Years	Composite
Lead (dry weight basis)	mg/kg	Every 5 Years	Composite
Mercury (dry weight basis)	mg/kg	Every 5 Years	Composite
Molybdenum (dry weight basis)	mg/kg	Every 5 Years	Composite
Nickel (dry weight basis)	mg/kg	Every 5 Years	Composite
Selenium (dry weight basis)	mg/kg	Every 5 Years	Composite
Zinc (dry weight basis)	mg/kg	Every 5 Years	Composite

NOTE: Soil chemistry testing must be in accordance with the Methods of Soil Analysis published by the American Society of Agronomy, and in accordance with Part III, (B), Section 151 of the Department's Guidance and Regulations Governing the Land Treatment of Wastes. See Part I, F. for reporting requirements.

The Department may modify the sampling frequency based upon review of continuing or additional analyses.



## B.7 GROUNDWATER MONITORING

Application of sludge to the designated fields shall not cause groundwater to be in violation of applicable Federal or State drinking water standards on an average annual basis. If down-gradient potable water supply wells (public or private) are impacted above applicable Federal or State drinking water standards from the land application of sludge, the permittee shall be required to provide a free Department approved alternative water supply to the affected parties.

<u>Parameter</u>	<u>Measurement</u>	<u>Sampling Frequency</u>	<u>Sample Type</u>
Depth to Water	hundredth of feet	Quarterly*	In-Situ
Temperature	°C	Quarterly*	In-Situ
pH	S.U.	Quarterly*	In-Situ
Specific Conductivity	umhos/cm	Quarterly*	In-Situ
Dissolved Oxygen	mg/l	Quarterly*	In-Situ
Nitrate + Nitrite as Nitrogen	mg/l	Quarterly*	Grab
Ammonia as Nitrogen	mg/l	Quarterly*	Grab
Total Nitrogen	mg/l	Quarterly*	Grab
Total Phosphorus	mg/l	Quarterly*	Grab
Chloride	mg/l	Quarterly*	Grab
Sodium	mg/l	Quarterly*	Grab
Total Dissolved Solids	mg/l	Quarterly*	Grab
Fecal Coliform	#/100ml	Quarterly*	Grab

All groundwater sampling activities shall be performed in compliance with the Department's Field Manual for Groundwater Sampling (March, 1988) and in accordance with procedures approved by the Department.

Groundwater monitoring results for each monitoring well shall be reported using the State of Delaware Well Identification Tag Number that is required on all wells in accordance with the Delaware Regulations Governing the Construction and Use of Wells, Section 10, A.

After notice and opportunity for a hearing, the Department may modify the list of parameters to be monitored or the frequency monitoring by the permittee based upon observations of groundwater quality trends in the area.

\* The following wells shall be sampled every other month until the permittee is notified in writing by DNREC that the frequency can be relaxed to quarterly:

Milton Farm (DNREC ID) 242952, 242953 and 242954

New Market Farm (DNREC ID) 242584, 242585, and 242586

Harbeson Farm (DNREC ID) 242581

## B.8 PLANT TISSUE AND GRAIN ANALYSIS

None is required at this time.

## C. SCHEDULE OF COMPLIANCE

None at this time

#### **D. BONDING**

As a requirement for maintaining this permit, the permittee shall file with the Department a bond or other security on a form approved by the Department. The bond shall be conditioned upon the fulfillment of all requirements related to this permit. Liability under the bond shall remain in effect until the expiration date of this permit. A bond in the amount of \$45,000 shall be executed by the applicant and by a corporate surety licensed to do business in this State. The obligation of the applicant and of any corporate surety under the bond shall become due and payable, and all or any part of any cash or securities shall be applied to payment of the costs of properly fulfilling any requirement of the permit if the Department has:

1. Notified the applicant and any corporate surety that the conditions of the permit have not been fulfilled, and specified in the notice the particular deficiencies in the fulfillment of the permit conditions;
2. Given the applicant and any corporate surety a reasonable opportunity to correct the deficiencies and to fulfill all of the conditions of the permit; and
3. Determined that, at the end of a reasonable length of time, some or all of the deficiencies specified in Part I, D.1, above, remain uncorrected.

#### **E. MONITORING**

1. Representative Sampling:

Samples and measurements taken as required herein shall be representative of the volume and nature of the sludge, septage and/or waste to be land applied.

2. The permittee shall automatically resample the sludge, septage and/or waste and submit to the Department and the landowner additional analyses if there has been a significant change (greater than 25%) in the quality of sludge, septage and/or waste. The permittee shall then be required to recharacterize the sludge, septage and/or waste in order to determine if any change to the land limiting constituent has occurred. Any change in sludge, septage and/or waste characteristics that affects the land limiting constituent shall be included in revised Project Development Reports which shall be submitted to the Department. After a review of these results, the Department may invoke the provisions of Part II, B.6 of this permit.

3. Recording of Results:

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date and time of sampling and/or measurement;
- b. The person(s) who performed the sampling and/or measurement;



- c. The dates the analyses were performed and the time the analyses were begun;
- d. The person(s) who performed the analyses; and,
- e. The results of each analysis.

4. Records Retention:

All records and information resulting from the monitoring activities required by this permit including all records of instrumentation and recording from continuous monitoring instrumentation shall be retained for five (5) years. This period of retention shall be extended automatically during the course of any resolved litigation regarding the regulated activity or regarding control standards applicable to the permittee, or as requested by the Department.

**F. REPORTING**

- 1. The permittee shall submit to the Department and landowners an annual operation report on or before February 1 of each year. The annual operation report shall include the following:
  - a. The daily operational record (as specified in Part II, A.1);
  - b. The weight (wet and dry tons) and volume of wastewater treatment facility sludge, septage, and waste generated in the lime stabilization plant, and wastes utilized at the land application sites;
  - c. The weight of nitrogen, phosphorus and potassium, from sludge, septage and/or waste, applied to each field. Supplemental fertilizers must be reported separately;
  - d. Any changes in ownership of the land where the operation is conducted or any change in any lease agreement for the use of such land that may affect or alter the operator's rights upon such land;
  - e. A chemical analysis of soil from each field for the constituents identified in Part I, B.5. The results shall be compared to the corresponding soils data submitted as a part of the Project Development Reports. The procedure for soil analysis shall be consistent with Department guidance;
  - f. A chemical analysis of water from each monitoring well for the constituents identified in Part I, B.7 of this permit. Additionally, all observation and/or monitoring wells surrounding application fields must be monitored and the results recorded, before land application begins each calendar year and at least monthly during land application activities.
  - g. Site maps of the same scale and contour interval as the maps submitted

with the Project Development Reports, showing the boundaries within each field where sludge, septage and/or waste has been applied during the previous year;

- h. For each site: the cropping scheme following during the previous year and anticipated for the coming year; crop yield data and an explanation of which portions of the plants were harvested; results of plant tissue and grain analyses, if required; identification of rates for the coming year based on nitrogen mineralization calculations from previous sludge, septage and/or waste application practices;
  - i. Sludge, septage and/or waste application rate adjustments, if necessary (See Part I, A.); and
  - j. Any other information required by the Department.
2. Sludge, septage and/or waste analytical and stabilization process monitoring data obtained during the previous monitoring period shall be summarized for that period and postmarked no later than the 28th day of the month following the completed reporting period. **If no sludge, septage and/or waste was applied during this quarter a signed statement saying no application occurred this quarter shall be submitted to the Department.** Signed copies of these, and all other reports required herein, shall be submitted to the Department at the following address:

**DELAWARE DEPARTMENT OF NATURAL RESOURCES AND  
ENVIRONMENTAL CONTROL, DIVISION OF WATER, SURFACE WATER  
DISCHARGES SECTION, 89 KINGS HIGHWAY DOVER, DELAWARE  
19901 TELEPHONE: (302) 739-9946**

When submitting monitoring results, copies of the original laboratory sheets should be included. If more than one sample is analyzed during any month, a table showing the range of constituent concentration values shall be prepared and included with the submittal.

3. The permittee shall submit copies of all monitoring results to the landowner of each site in accordance with condition F.2, above.
4. Test Procedures

Test procedures for laboratory analyses shall conform to the applicable test procedures identified in Section 151 of Part III, (B), of the Department's Guidance and Regulations Governing the Land Treatment of Wastes, unless otherwise specified in this permit.



## G. DEFINITIONS

1. "Agricultural Utilization" means the application rate of wastes, septage, sludge or sludge products which shall not exceed the nutrient needs of the crop grown on the particular soil plus the other assimilative pathways in soils (e.g. immobilization with organic material, volatilization, and leachate in compliance with drinking water standards). This term may be used interchangeably with "agronomic rate".
2. "Composite" means a series of grab samples which have been collected in a manner such that the final sample is representative of the volume and characteristics of the material to be analyzed.
3. "Depth of Tillage" means the maximum depth below ground surface at which sludge or waste can be found after injection or incorporation into the soil.
4. "Land application" means the placement of sludge, treated sludge, septage, waste, or any other product containing these materials within 2 feet below the surface of land used to support vegetative growth.
5. "PSRP" means Process to Significantly Reduce Pathogens.
6. "Septage" means the liquid and organic solid contents of a septic tank, cesspool, holding tank or portable toilet waste.
7. "Sewage" means water carried human or animal wastes from septic tanks, water closets, residences, buildings, industrial establishments, or other places, together with such ground water infiltration, subsurface water, admixture of industrial wastes or other wastes as may be present.
8. "Sewage sludge" means sludge which derives in whole or in part from sewage.
9. "Sludge" means the accumulated semi liquid suspension, settled solids, or dried residue of these solids that is deposited from (a) liquid waste in a municipal or industrial wastewater treatment plant, (b) surface or ground water treated in a water treatment plant, whether or not these solids have undergone treatment. Septage is included herein as sludge.
10. "Treatment" means a process which alters modifies or changes the biological, physical, or chemical characteristics of sludge or liquid waste.
11. "Vector Attraction" is the characteristic of sewage sludge, septage or waste that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.
12. "Waste" is any material approved for land application that is regulated under Part V of the Department's Guidance and Regulations Governing the Land Treatment of Wastes.



## Part II

### A. MANAGEMENT REQUIREMENTS

#### 1. Land Application of Sludge, Septage and Waste

The permittee shall prepare and maintain an operational record for each day that stabilized sludge, septage and/or waste is applied and when any other management activities are conducted at the land application sites.

The daily operational record shall include the following:

- a. The date, type, and wet or dry weights of sludge and waste applied and the date and number of gallons of septage applied;
- b. The facility from which the sludge and waste originated and the generator location and origins from which septage was collected;
- c. A record of any major deviations from the operating plan;
- d. General daily weather conditions;
- e. The application rates for sludge, waste and septage;
- f. A map for each site showing the area of daily activity;
- g. A record of all actions taken to correct violations of the Regulations;
- h. Management undertaken, such as planting and harvesting of crops, fertilizers and chemicals added, frequency of irrigation, techniques used, etc.

#### 2. Change in Operation

The application of sludge, septage and/or waste to the sites authorized herein shall be consistent with the terms and conditions of this permit. The application of sludge, septage and/or waste at levels in excess of the amount necessary to provide plant available nitrogen for the crop being grown, in accordance with the limits identified in Part I, A.1, A.2, and A.3 of this permit, shall constitute a violation of the permit. Any anticipated facility expansion, production increase, or change in site conditions which would affect the land limiting constituent, create a new land limiting constituent, or adversely affect site conditions must be reported to the Department. Upon review of this information, the Department may invoke the provisions of Part II, B.6 of this permit.

#### 3. Noncompliance Notification

The permittee shall report to the Department:

- a. In writing thirty (30) days before any planned physical alteration or addition to the permitted facilities or activities, if that alteration or addition would result in any significant change in information that was submitted during the permit application process;
- b. In writing thirty (30) days before any anticipated change which would result in noncompliance with any permit condition or Part III, (B), of the Guidance and Regulations Governing the Land Treatment of Wastes or CFR Part 503, Standards for the Use and Disposal of Sewage Sludge;
- c. Orally within twenty-four (24) hours from the time the permittee became aware of any noncompliance which may endanger the public health or the environment, at (800) 662-8802. In addition, a call must be placed at (302) 739-9946 during normal business hours;
- d. In writing as soon as possible but within five (5) days of the date of the permittee knows or should know of any noncompliance unless extended by the Department.

This report shall contain:

- 1) A description of the noncompliance and its cause;
  - 2) The period of noncompliance including to the extent possible, times and dates and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
  - 3) Steps taken or planned to reduce or eliminate the reoccurrence of the noncompliance; and,
- e. In writing as soon as possible after the permittee becomes aware of relevant facts not submitted or incorrect information submitted, in a permit application or any report to the Department. Those facts or the correct information shall be included as part of this report.
4. Minimize Impacts

The permittee shall take all necessary actions to eliminate and correct any adverse impact on the public health or the environment resulting from permit noncompliance.

## **B. RESPONSIBILITIES**

### **1. Renewal Responsibilities**

At least 180 days before the expiration date of this permit, the permittee shall submit a new application for a permit or notify the Department of the intent to



cease operation by the expiration date. **When submitting a new permit application, updated Project Development Reports (PDRs) for all sludge, septage and waste application sites must be included.** In the event that a timely and sufficient reapplication has been submitted and the Department is unable, through no fault of the permittee, to issue a new permit before the expiration date of this permit, the terms and conditions of this permit are automatically continued and remain fully effective and enforceable.

2. Entry and Access

The permittee shall allow the Department, consistent with 7 Del. C., Chapter 60 to:

- a. Enter the permittee facility;
- b. Inspect any records that must be kept under this permit;
- c. Inspect any facility, equipment, practice, or operation permitted or required by this permit;
- d. Sample or monitor for the purpose of assuring permit compliance, any substance or any parameter at the facility or land application site;

3. Provide Information

The permittee shall furnish to the Department within a reasonable time, any information requested, including copies of records, which may be used by the Department to determine whether cause exists for modifying, revoking, reissuing, or terminating the permit, or to determine compliance with the permit or Part III, (B), of the Guidance and Regulations Governing the Land Treatment of Wastes.

4. Transfer of Ownership or Control

This permit shall be transferable to a new owner or operator provided that the permittee notifies the Department by requesting a minor modification of the permit before the date of transfer and provided that the transferee shows evidence of a legal right to use the site and is otherwise in compliance with all applicable provisions of Part III, (B), of the Department's Guidance and Regulations Governing the Land Treatment of Wastes.

5. Operation of Facility

The permittee shall at all times properly maintain and operate all structures, systems, and equipment for treatment, control and monitoring, which are installed or used by the permittee to achieve compliance with this permit or Part III, (B), of the Guidance and Regulations Governing the Land Treatment of Wastes.

6. Permit Revocation and Modification

- a. After notice and opportunity for a hearing, this permit may be modified or revoked in whole or in part during its term for causing including, but not limited to, the following:
  - 1) Violation of any terms or conditions of this permit;
  - 2) Obtaining this permit by misrepresentation or failure to disclose fully all of the relevant facts;
  - 3) Any change in operating conditions that requires either a temporary or permanent permit modification; or
  - 4) If the Department finds that the public health, safety or welfare requires emergency action, the Department shall incorporate findings in support of such action in an written notice of emergency revocation issued to the permittee. Emergency revocation shall be effective upon receipt by the permittee. Thereafter, if requested by the permittee in writing, the Department shall provide the permittee a revocation hearing and prior notice thereof. Such hearings shall be conducted in accordance with 7 Del. C., Chapter 60.
- b. The Department may revoke this permit if the permittee violates any permit condition, any provisions of the Guidance and Regulations Governing the Land Treatment of Wastes, or fails to pay applicable Department fees.

7. Permit Closure Report

- a. All land approved for the Agricultural Utilization of sludge, septage and waste is required to have a closure report when the land is no longer being utilized as described in permit application. The report must be submitted to the Department within four (4) months of determination that the field will no longer be utilized for sludge, septage or waste application. The closure report will have the following:
  - 1) Letter from permittee stating the application site (with tax parcel number(s)) will no longer receive sludge, septage and waste approved by this Permit.
  - 2) Copy of the last sludge, septage and/or waste monitoring results as required in Part 1, B.1 and B.2 of this permit.
  - 3) Copy of the last soil monitoring results as required in Part 1, B.5 of this permit. A soil test is required after the last land application of sludge, septage and/or waste.
  - 4) Copy of the last groundwater monitoring well results as required in



Part 1, B.7 of this permit. A groundwater test is required after the last land application of sludge, septage or waste.

8. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under 7 Del. C., Chapter 60.

9. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation.

10. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, or any infringement of Federal, State or local laws or regulations.

11. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application or any provision of this permit to any circumstances is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

12. Compliance Required

The permittee shall comply with all conditions of the permit.

13. Reopener

In the event that the Part III, B, of the Guidance and Regulations Governing the Land Treatment of Wastes or applicable Federal Regulations are revised, this permit may be reopened and modified accordingly after notice and opportunity for a public hearing.

## Part III

### A. SPECIAL CONDITIONS

The permittee must ensure that the following conditions are met:

1. Monitoring Wells

~~a. Groundwater shall be sampled at the following locations at the frequencies indicated.~~

~~1) Ellendale: Groundwater shall be sampled per the frequency listed in Part I, Subsection B.7. at each monitoring well.~~

~~2) Milton, Harbeson and Ellendale: Upon installation and development of groundwater monitoring wells in accordance with Part I, Subsection C, Schedule of Compliance, groundwater shall be sampled per the frequency listed in Part I, Subsection B.7 of this permit at each monitoring well.~~

b. All monitoring wells samples shall be analyzed for the parameters listed in Part I, Subsection B.7 of this permit.

c. Copies of the laboratory reports for all groundwater analytical data and the corresponding sampling logs shall be submitted to the Department within thirty (30) days of the sampling date. In addition, the elevation of the top of the casing (TOC) for each monitoring well shall be surveyed in reference to a permanently marked, stationary point. After notice and opportunity for a hearing, the Department may modify the list of parameters specified above based on observations of groundwater quality trends in the area. Groundwater monitoring shall continue in effect until the Department determines that it is no longer necessary.

2. Only sludge and septage meeting the requirements for stabilization and the processed to significantly reduce pathogens by methods approved by the Department and as specified in this permit may be land applied.

3. Sludge, septage and waste shall be transported to the land treatment site in accordance with Delaware Waste Transporters Permit No. WH-13.

4. The septage stabilization facility and the land application areas shall be managed in such a manner as to prevent objectionable odors beyond the site boundaries. If obnoxious odors are produced which are considered to be a public nuisance the permittee shall, with the approval of the Department, take the necessary steps to eliminate such odors. Failure to control odors may result in the Departments invoking Part II, B.6 of this permit.



5. A minimum one (1) foot freeboard must be maintained in the septage storage tank at all times.
6. Grease trap waste removed from restaurants grease traps may be directly land applied at the site without prior lime stabilization provided that only kitchen waste is processed through the grease trap. Part V of the Guidance and Regulations Governing The Land Treatment of Wastes apply to the collection, storage, treatment, application and monitoring of grease trap waste handling.
- ~~7. The permittee shall include in the annual report calculations showing the annual pollutant loading rates for the pollutants identified in 40 CFR Part 503, Subpart B, 503.13, Table 4. The permittee shall not apply sludge, septage and/or waste to the site at rates that would cause any of those loading rates to be exceeded.~~
8. The permittee shall pay the Department the lawful annual permit fee for the agricultural utilization of sludge as established by Legislature.
9. The septage lime stabilization treatment system described in this permit is designated as a Class I facility and requires a Class I licensed wastewater operator.
10. Septage solids shall not be land applied onto areas where septage supernatant is spray irrigated.
11. Septage supernatant may not be spray irrigated onto barren fields.
12. Septage supernatant must be applied in a manner such that the application is even and uniform over the area being irrigated.
13. The ~~spray~~ **septage application** field(s) shall be managed in such a manner as to prevent septage pooling and/or discharge to any surface waters. Should pooled areas become evident, no spraying shall be conducted in those areas until saturated conditions no longer exist.
14. Pre Start Up (Must be accomplished annually for each application site)
  - a. Prior to the application of sludge, septage and/or waste, buffer zones and the areas on which the material is to be applied must be clearly marked with stakes or other suitable markers acceptable to the Department.
  - b. The permittee must notify the Department at (302) 739-9946 at least two (2) working days prior to the application of sludge, septage and/or waste to any field for the first time each calendar year.
  - c. Before the permittee can begin to apply sludge, septage or waste to the designated site, a pre start up inspection may be conducted by the Department to verify that proper buffer zones and non application areas are suitably marked. Based on the results of the pre start up inspection,

the Department will either:

- 1) grant approval for sludge, septage and/or waste application operations to begin or;
- 2) require the permittee to perform additional site preparation (such work must be performed and approved prior to sludge, septage and/or waste application).

15. Application Measures

- a. Utilization of industrial septage, with the exception of septage generated by restaurants, must receive separate authorization from the Department prior to land application.
- b. If at any time during the sludge, septage, and/or waste application period the depth to groundwater is less than 20 inches from the surface, all sludge, septage and/or waste application activities shall immediately cease and the Department shall be notified. Departmental approval shall then be required before sludge and/or waste application operations can continue.

16. Post Application Measures

- a. The facility must provide the Department with a crop plan for the year in which sludge, septage and/or waste is to be applied to lands specified in this permit. Any changes to the crop rotation plan must be approved by the Department prior to implementation.
- b. The Annual Report shall be submitted to the Department as required in Part I, F.1 of this permit. Should the permittee fail to supply the required documents on or before the deadline specified, the Department may revoke this permit.

17. If, for any reason, any of the contracts or agreements specified in the Project Development Report any one of the approved sites is cancelled or amended, approval granted for use of that site shall be void.

18. Regulatory Modification

In the event that Part III, (B) or Part V, of the Guidance and Regulations Governing the Land Treatment of Wastes or Title 40 of the Code of Federal Regulations Part 503, Standards for the Use or Disposal of Sewage Sludge are revised, this permit may be reopened and modified accordingly after notice and opportunity for a public hearing.

19. The permittee is responsible for compliance with both the Department's Guidance and Regulations Governing the Land Treatment of Wastes and Title 40 of the Code of Federal Regulations, Part 503, Standards for the Use and



Disposal of Sludge. Compliance with this permit does not constitute compliance with the Federal regulation.

20. Supersedes Previous Permit

This permit supersedes State Permit No. AGU 1202-S-03 effective January 1, 2012.



STATE OF DELAWARE  
**DEPARTMENT OF NATURAL RESOURCES AND  
ENVIRONMENTAL CONTROL**

DIVISION OF WATER  
RICHARDSON & ROBBINS BUILDING  
89 KINGS HIGHWAY  
DOVER, DELAWARE 19901

PHONE  
(302) 739-9948

**GROUNDWATER  
DISCHARGES**

September 20, 2021

Attn: Gerry Desmond  
Clean Delaware LLC  
PO Box 123  
Milton, DE 19968

Re: State of Delaware Non-Hazardous Liquid Waste Transporters Permit Number DE WH-013

Dear Mr. Desmond:

Enclosed please find Non-Hazardous Liquid Waste Transporters Permit Number DE WH-013 which allows Clean Delaware LLC to transport septage, holding tank waste, portable toilet waste, grease trap waste and/or cooking oil waste, municipal or industrial biosolids, sludge, leachate and other non hazardous liquid waste in the State of Delaware to be disposed of at the noted locations.

Please be reminded that pumping of portable toilets requires the operator to possess a valid Class F Liquid Waste Hauler license. Also, in accordance with Section 4.12.6.7 of the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems, all Class F Liquid Waste Hauler licensees working for your company that pump out septic tanks in Delaware are required to submit quarterly reports to the GWDS documenting the location, the 911 mailing address and amount of septage removed in total gallons from each septic tank, using either the Class F mobile reporting application or the web-based reporting application.

A copy of this permit must be kept with all vehicles used for transport in the State of Delaware.

If you have any questions regarding the permit, please contact me at (302) 739-9948.

Sincerely,

*Katharyn Potter*

Katharyn Potter, MS  
Environmental Engineer  
Groundwater Discharges Section

*Enclosure*



## **Non-Hazardous Liquid Waste Transporters Permit**

Issued by: Department of Natural Resources and Environmental Control  
Division of Water  
Groundwater Discharges Section  
89 Kings Highway, Dover, Delaware 19901  
302-739-9948

<b>Clean Delaware LLC</b> PO Box 123 Milton, DE 19968	Permit Number: <b>DE WH-013</b> Issue Date: 9/26/2021 Expiration Date: 9/25/2026
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Pursuant to the provisions of 7 Del. C., Chapter 60, and the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems, permission is hereby granted to Clean Delaware LLC to operate and maintain the vehicle(s) listed in the permit application and any supplemental submissions to the Department's GWDS, operated by Clean Delaware LLC, for the purpose of collecting, transporting through Delaware and disposing of the non-hazardous liquid wastes listed in Condition 1 of this permit.

A copy of this permit must accompany each permitted vehicle and be presented upon request to any law enforcement officer or representative of the Department of Natural Resources and Environmental Control (Department).

This permit is issued subject to the following conditions:

1. Disposal site(s) for all waste(s) transported shall be the following:
  - a. Septage and holding tank waste:
    - i. Clean Delaware LLC;
    - ii. Kent County Sewer System;
    - iii. Sussex County Sewer System; and
    - iv. Out-of-state permitted facilities.
  - b. Grease trap waste:
    - i. Out of state permitted facilities and
    - ii. Agricultural Utilization Permit AGU 1702-S-03 (and subsequent amendments):
      - (a) Milton Farm Site (tax parcels 2-35-14.00-1.00; 2-35-14.00-2.00; 2-35-14.00-3.00; 2-35-14.00-60.00);
      - (b) Harbeson site (tax parcel 2-35-30.00-62.00) and
      - (c) Ellendale site (tax parcel 2-35-6.00-12.00).
  - c. Portable toilet waste: Clean Delaware LLC.
  - d. Municipal/Industrial Biosolids and Sludge:
    - i. Clean Delaware LLC and
    - ii. Out-of-state permitted facilities.
  - e. Other non-hazardous liquid waste:
    - i. Clean Delaware LLC and
    - ii. Out-of-state permitted facilities.
2. Permittee shall maintain a current copy of their permit/authorization documentation for each authorized facility listed in Condition 1 on file with the Department's Groundwater Discharges Section (GWDS).
3. All non-hazardous liquid waste shall be transported only to authorized facilities.

4. None of the wastes shall be deposited into ditches, watercourses, lakes, ponds, tidewater sources, landed property or at any point other than the authorized facilities mentioned in Condition 1 above.
5. All waste material collected by permittee shall be transported and disposed of in accordance with the regulations of the Department and upon authorization by the authorized facilities listed in Condition 1 above. None of these wastes may be disposed of within the State of Delaware without specific permission of the Department.
6. The company name, address and permit number shall be displayed on both sides of each vehicle used for hauling purposes in letters not less than three inches high and of a color contrasting the color of the vehicle.
7. Every vehicle used for waste transporting purposes shall be equipped with a leak-proof tank or body and shall be maintained in a clean and sanitary condition. All pumps, hoses, and vehicle tanks or bodies shall be maintained so as to prevent leakage. Provisions shall be made to discharge all liquid waste through a leak-proof hose from the tank compartment of the vehicle.
8. All waste transporting truck pumping and discharge hoses shall be fitted with automatic shut-off valves at the tank compartment of the vehicle(s).
9. All vehicles used for transport shall be operated and maintained so as to be in compliance with all state and federal regulations and not present a hazard to human health or the environment through unsafe vehicle conditions. The permittee is responsible for the operation and maintenance of all vehicles operated under this permit.
10. All transporters shall at all times maintain commercial automobile liability insurance with a combined single limit of at least One Hundred Thousand Dollars (\$100,000). Permittee shall maintain a current copy of a Certificate of Insurance demonstrating compliance with this requirement on file with the Department's Groundwater Discharges Section (GWDS).
11. All transporters shall maintain a current copy of their plan for the prevention, control, and cleanup of accidental discharges on file with the Department's GWDS.
12. Any spill greater than 25 gallons shall be reported to the Department's GWDS in writing within five days of the incident and shall include the date, time, location, and measures taken to contain and clean spill.
13. All transporters of sludge shall adhere to the following conditions:
  - a. Liquid sludge (less than 15% solids) shall be transported in watertight vessels such as tank trucks or other vessels which can provide equivalent protection against spills and leakage.
  - b. Sludge cake (15% - 35% solids) shall be transported in watertight boxes, such as dump trucks, properly sealed to prevent leaks, or cement type vehicles. When sludge cake is transported in dump trucks the following standards shall be met:
    - i) The trucks shall be equipped with splash guards firmly attached horizontally at the front and rear of the trailer;
    - ii) Each splash guard shall cover at least 25% of the trailer's open area; and



- iii) A minimum two feet of freeboard shall be maintained between the sludge and the top of the trailer unless the top of the trailer is completely sealed.
  - c. Dried sludge (greater than 35% solids) may be transported in open boxes, such as dump trucks, which are properly sealed to prevent leakage. The trucks shall be covered with tarps or the equivalent.
14. All individuals who will be responsible for the removal of the solid and liquid contents of septic tanks, cesspools, seepage pits, grease traps, holding tanks, portable toilets or any other individual residential on-site wastewater treatment and disposal system shall maintain a Class F Liquid Waste Hauler License (Class F License). While performing any Class F License related work, the Class F Licensee shall keep a copy of their Class F License identification card available for verification.
  15. All transporters of septage shall pump on-site wastewater treatment and disposal systems according to the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems, amended January 11, 2014.
  16. The only repairs a Class F Licensee is authorized to perform are the following: repair, add or replace septic tank and/or holding tank risers, baffles, lids, distribution box lids and effluent filters. No other repairs are authorized to be performed except by a Class E System Contractor who must first obtain a Repair Permit from the Department's GWDS.
  17. All transporters are prohibited from pumping out grease traps without first entering into a Grease Trap Maintenance Contract with the property owner. A copy of the contract document must be submitted to the Department's GWDS within 15 days of signing the contract. Permittee may not enter into a Grease Trap Maintenance Contract unless the permittee has an authorized facility to dispose of grease trap waste identified in this permit. Co-mingling of septage and grease trap waste is prohibited, unless specifically approved, in writing, by the authorized facility(ies) that will be receiving the grease trap waste. If a "Grease Trap Maintenance Contract" is voided by either party, the permittee shall notify the Department's GWDS in writing within 30 days.
  18. Class F Licensees are prohibited from pumping out holding tanks without first entering into a Sewage Holding Tank Maintenance Contract with the property owner. A copy of the contract document must be submitted to the Department's GWDS within 15 days of signing the contract. If a Sewage Holding Tank Maintenance Contract is voided by either party, the permittee shall notify the Department's GWDS in writing within 30 days.
  19. If the permittee is transporting Septage, Holding Tank Waste, or Municipal and/or Industrial Biosolids & Sludge from Package Treatment Plants, the permittee shall maintain a bond, or other security in a form approved by the Department's GWDS, in the amount of Five Thousand Dollars (\$5,000) on file with the Department's GWDS. The bond shall be payable to the State of Delaware and the obligation of the bond shall be conditioned upon the fulfillment of all requirements related to the permit.
  20. No waste petroleum or non-domestic waste products may be collected or discharged by any waste transporter unless in accordance with a specific permit for these types of wastes. Transportation of liquid wastes containing any petroleum products will require a permit from the Division of Waste and Hazardous Substances (302-739-9400).
  21. This permit does not relieve the transporter of complying with any other applicable Federal, State or local regulations.

22. In the event that regulations or guidelines governing the activity authorized herein are revised, this permit may be reopened and modified after notice and opportunity for a public hearing. At that time, additional limitations, requirements, and/or special conditions may be included in the permit.
23. This permit may be suspended or revoked for violation of any of these permit conditions, Department regulations, orders of the Secretary, provisions of the Environmental Protection Act of 1973 (7 Del. C., Chapter 60), or failure to pay applicable Department fees.
24. A complete renewal application must be submitted to the Department's GWDS at least 45 days prior to the expiration of this permit to ensure renewal prior to expiration.
25. Pursuant to House Bill No. 360, June 25, 1991, Permittees are required to pay an annual permit fee of Four Hundred Fifty Dollars (\$450.00), payable to the State of Delaware. An annual fee invoice will be mailed to each permittee, to the address on file. This fee is due October 1st of each calendar year. Non-payment of the annual fee shall result in revocation of this Permit.
26. All persons who will be responsible for the removal of the solid and liquid contents of septic tanks shall ensure that the required quarterly reports documenting the location, 911 mailing address and amount of septage removed (in total gallons) from each septic tank pumped out in Delaware are furnished to the GWDS.
27. Waste materials which are transported to a landfill, recycling center, composting facility, or a Delaware Solid Waste Authority (DSWA) facility must obtain a Solid Waste transporter permit from the Division of Waste and Hazardous Substances. A Non-Hazardous Liquid Waste Transporter Permit does not relieve a transporter from having to obtain a Solid Waste transporter permit in those circumstances.

Signed,

*Katharyn Potter*

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Katharyn Potter, MS  
Environmental Engineer  
Groundwater Discharges Section



# NON-HAZARDOUS LIQUID WASTE TRANSPORTERS PERMIT APPLICATION

Ground Water Discharges Section, Division of Water Resources  
Delaware Department of Natural Resources and Environmental Control  
89 Kings Highway, Dover DE 19901  
(302) 739-9948

1. Permit Number (For renewals only):

WH-13

2. Company Information

Company Name:

CLEAN DELAWARE LLC

Telephone:

302.684.4221

Fax:

302.684.1850

Address (street, city, state and zip code):

P.O. BOX 123 MILTON, DELAWARE 19968

Company Email Address & Contact Name:

gerry@cleandelaware.com

GERALD DESMOND

3. Owner/President Business Information

Name:

MICHAEL STEINER

Business Telephone:

302.684.4221

Business Address if different from above (street, city, state and zip code):

P.O. BOX 1000 CHESWOLD DELAWARE 19936

4. Vehicle(s) Information (Attach additional sheets if necessary to identify each vehicle used for transport.)

	Vehicle Type (i.e. Tank, trailer, etc.)	Vehicle Make & Model	Vehicle Year	License No. and State of Registration	Capacity (gal)
i.	SEE ATTACHED LIST				
ii.					

**\* Please submit a Certificate of Insurance for each vehicle listed demonstrating commercial automobile liability insurance with a combined single limit of at least \$100,000.**

5. Please Check Type(s) of Waste Being Transported and Provide the Information Requested in the Indicated Sections for Each Waste Type Checked

		Waste Type	Quantity Collected	Provide the Information in the Following Sections for Each Waste Type Checked
i.	✓	Septage	4,500,000 gal/yr	A
ii.	✓	Holding Tank Waste	1,200,000 gal/yr	A
iii.	✓	Grease Trap Waste and/or Cooking Oil Waste	635,000 gal/yr	B
iv.	✓	Portable Toilet Waste	420,000 gal/yr	C
v.	✓	Municipal or Industrial Biosolids	667,000 gal/yr	D
vi.	✓	Sludge From Package Treatment Plants	200,000 gal/yr	D
vii.	✓	Other Non-Hazardous Liquid Waste	2,223,000 gal/yr	E



## Documents required for all new permit applications *and* renewals:

- Attach an Operation Plan detailing the following:
  - a spill reporting and clean-up plan,
  - plans for cleaning vehicles,
  - recordkeeping procedures and
  - days and hours of operation.
- Attach a list of all disposal facilities to be used. Include a copy of the permit/authorization letter from each disposal facility stating the company is currently authorized to discharge the requested waste stream (i.e. septage, holding tank waste, portable toilet waste, etc.) to the facility. Authorization documentation is required for both new and renewal applications.

**7 DelC §6023(d): *No person shall haul, convey or transport any liquid waste in any container without a license issued by the Department.***

### Section A. Septage & Holding Tanks

1. Attach a list of all Class F Licensees currently working for the company.  
If there are no Class F Licensees currently working for the company, please note according to Section 4.1.6 of the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems, all individuals who will be responsible for removal, transportation or disposal of the solid and liquid contents of septic tanks, cesspools, grease traps, seepage pits, holding tanks, portable toilets or other wastewater treatment or disposal facilities must obtain a Class F license before pumping. *For a Class F License application, please contact the Licensing Coordinator at 302-739-9948.*
2. Part III B, Section 500 of the Guidance and Regulations Governing the Land Treatment of Wastes directs, as a requirement for keeping a permit issued under these Regulations, the permittee to file a bond or other security in the amount of Five Thousand Dollars (\$5,000) with the Department. The bond is to be payable to the Department and the obligation of the bond shall be conditioned upon the fulfillment of all requirements related to the permit. **If this application is for permit renewal, please submit a copy of the current Transporters Bond certification.**
3. Applicants for a renewal permit must be in compliance with the Pump Reporting requirements in accordance with the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems ('On-Site Regulations'): §4.12.6.7.1: *The Class F license shall submit quarterly reports documenting the location, the 911 mailing address and amount of septage removed in total gallons.*



## Section B. Grease Trap Waste and/or Cooking Oil Waste

1. Attach a list of all disposal facilities to be used.
2. Attach a list of all Class F Licensees currently working for the company.  
If there are no Class F Licensees currently working for the company, please note according to Section 4.1.6 of the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems, all individuals who will be responsible for removal, transportation or disposal of the solid and liquid contents of septic tanks, cesspools, grease traps, seepage pits, holding tanks, portable toilets or other wastewater treatment or disposal facilities must obtain a Class F license before pumping. *For a Class F License application, please contact the Licensing Coordinator at 302-739-9948.*

## Section C. Portable Toilets

1. Attach a list of all disposal facilities to be used.
2. Attach a list of all Class F Licensees currently working for the company.  
If there are no Class F Licensees currently working for the company, please note according to Section 4.1.6 of the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems, all individuals who will be responsible for removal, transportation or disposal of the solid and liquid contents of septic tanks, cesspools, grease traps, seepage pits, holding tanks, portable toilets or other wastewater treatment or disposal facilities must obtain a Class F license before pumping. *For a Class F License application, please contact the Licensing Coordinator at 302-739-9948.*
3. Quantity of portable toilets you own 1500

## Section D. Municipal and Industrial Biosolids & Sludge From Package Treatment Plants

1. Identify all Facilities the company will service by attaching a table listing the following:  

Facility Name of Sludge Generator	Estimated Volume of Sludge to be Transported	Disposal Facility*
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\* If sludge is to be land applied, include the current Agricultural Utilization Permit Number for that facility.
2. Provide transportation routes from all generating facilities to all applicable disposal facilities.
3. Indicate any treatment the sludge has undergone before transportation (for example anaerobic digestion, aerobic digestion, lime stabilization, composting, or dewatering).
4. Provide results of a laboratory analysis of a representative sample of the sludge which was obtained not more than 6 months before submission of the application unless these results would be submitted as a part of the land application program. The analysis shall include, as a minimum, percent solids, pH, and the dry weight concentration of total nitrogen, ammonium, nitrate, total phosphorous, total potassium, cadmium, copper, mercury, nickel, lead, zinc, arsenic, selenium, and molybdenum.
5. Part III B, Section 500 of the Guidance and Regulations Governing the Land Treatment of Wastes directs, as a requirement for keeping a permit issued under these Regulations, the permittee to file a bond or other security in the amount of Five Thousand Dollars (\$5,000) with the Department. The bond is to be payable to the Department and the obligation of the bond shall be conditioned upon the fulfillment of all requirements related to the permit. **If this application is for permit renewal, please submit a copy of the current Transporters Bond certification.**



### Section E. Other Non-Hazardous Liquid Wastes

1. Describe the source, nature and make-up of the non-hazardous liquid waste to be transported.

2. Will any of the wastes contain petroleum products (i.e. oil, gas, grease, etc.)? \_\_\_\_\_ Yes ☒ No

\* Transportation of liquid wastes containing any petroleum products will require a permit from the Division of Waste & Hazardous Substances (302-739-9400).

### 6. Permit Fee

This application will not be considered complete and cannot be processed unless accompanied by a fee in the amount of Four Hundred Fifty Dollars (\$450.00), payable to the State of Delaware, which is required for all new applicants. Pursuant to House Bill No. 360, June 25, 1991, Permittees are subsequently required to pay an annual permit fee of Four Hundred Fifty Dollars (\$450.00), payable to the State of Delaware. **If this application is for permit renewal, please do not submit the Four Hundred Fifty Dollar (\$450.00) fee with this application.** Annual permit renewal billing is done separately by our accounting department.

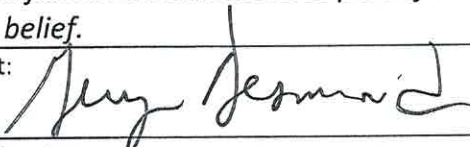
### 7. Public Notification Fee

Pursuant to 7 Del. C., Chapter 60, §6004, an advertisement shall be placed in a newspaper of general circulation in the county(ies) in which the activity is proposed and in a daily newspaper of general circulation through the State, notifying the public that the application has been received by the Department and offering a brief description of the nature of the proposed activity. In accordance with 7 Del. C., Chapter 60, §6004, the cost of such advertisement shall be borne by the applicant. This application will not be considered complete and cannot be processed unless accompanied by an advertising fee in the amount of **\$210.00**, payable to the State of Delaware.

### 8. Certification

*I certify that all information submitted as part of this application is true and correct to the best of my knowledge and belief.*

Signature of Applicant:



Date:

8-10-21

Printed Name of Applicant:

GERRY DESMOND

Title of Applicant:

GENERAL MANAGER

This application must be signed by an official owner, operator, or authorized representatives of your operation such as an operations manager, superintendent, or person of equal responsibility.

## **Section B. Grease trap waste**

Disposal Sites:

- 1) Land application at Clean Delaware Fields per AGU 1702-S-02
- 2) Delcora, Chester, PA

## **Section C. Portable Toilets**

Disposal Site:

- 1) Clean Delaware Lime stabilization plant, Rt 30 Milton

## **Section D. Municipal and Industrial Biosolids & Sludge from Package Treatment Plants**

Facilities (all pretreatment is aerobic digestion)

- 1) City of Lewes 150,000 gal per year disposed at Delcora
- 2) Town of Milton 150,000 gal per year disposed at Delcora
- 3) Town of Selbyville 650,000 gal per year disposed at Delcora and Clean Delaware Fields
- 4) Artesian Resources Beaver Creek 200,000 per year disposed at Delcora
- 5) Tidewater Utilities Country Grove 120,000 gal per year disposed at Delcora
- 6) Tidewater Utilities Bayfront 120,000 gal per year disposed at Delcora
- 7) Tidewater Utilities Ridings of Rehoboth 60,000 gal per year disposed at Delcora
- 8) Tidewater Utilities Harts landing 48,000 gal per year disposed at Delcora
- 9) Tidewater Utilities Retreat at Love Creek 72,000 gal per year disposed at Delcora

Lab Data Town of Selbyville (see attached)

## **Section E. Other Non Hazardous Liquid wastes**

- 1) Brewery waste – Dogfish head Brewery
- 2) Fresh Water Treatment Plant iron sludge – Artesian Bayville, Bethany, Frankford
- 3) Poultry de-boning waste – Allen Harim Foods
- 4) Leachate – Independent Transfer Stations

SEPTIC





## Clean Delaware Employees

#6061 Nick Austin – F  
#6044 Marcelino Bautista - F  
#5033 Jeff Bush - F, H  
#5986 Russell Campbell – E, F, H  
#5571 Theodore Campbell - F  
#5203 Henry Casey - F, H  
#5483 Daniel Cleary – B, E, F, H  
#4570 Gerald Desmond – B, E, F, H, I  
#5641 Rafael Encarnacion – F, H  
#6057 Steve Gregson - F  
#5846 Tyrell Hazzard – F  
#5679 Jesse Hudgins – F  
#5653 Carlos Hodge – F  
#4579 Emory King – E, F, H  
#5579 Scott Love – F  
#5943 Josue Marcano – F, H  
#6045 Thomas Purnell – F  
#5956 Harrell Richards -F  
#5673 Darnell Rogers – F  
#5997 Jose Serpa - F  
#5300 Mike Spalding – F, H  
#4600 David Stout – E, F, H



CLEAN-6

OP ID: EH

**CERTIFICATE OF LIABILITY INSURANCE**

DATE (MM/DD/YYYY)

08/10/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must have **ADDITIONAL INSURED** provisions or be endorsed. If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> <b>L &amp; W Insurance Agency</b> <b>P.O. Box 918</b> <b>Dover, DE 19903</b> <b>Erik Kaufmann</b>		<b>302-674-3500</b>		<b>CONTACT NAME:</b> Erik Kaufmann <b>PHONE (A/C, No, Ext):</b> 302-674-3500 <b>FAX (A/C, No):</b> 302-674-2909 <b>E-MAIL ADDRESS:</b>	
<b>INSURED</b> <b>Clean Delaware LLC</b> <b>PO Box 1000</b> <b>Cheswold, DE 19936</b>		<b>INSURER(S) AFFORDING COVERAGE</b>		<b>NAIC #</b>	
		<b>INSURER A:</b> Westfield Companies		<b>24112</b>	
		<b>INSURER B:</b> Allied Eastern Indemnity			
		<b>INSURER C:</b> Westchester Surplus Lines Ins			
		<b>INSURER D:</b>			
		<b>INSURER E:</b>			
		<b>INSURER F:</b>			

<b>COVERAGES</b>	<b>CERTIFICATE NUMBER:</b>	<b>REVISION NUMBER:</b>
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THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
<b>A</b>	<input checked="" type="checkbox"/> <b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> <b>Contractual Liab.</b> GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:			<b>TRA1938311</b>	<b>11/01/2020</b>	<b>11/01/2021</b>	EACH OCCURRENCE \$ <b>1,000,000</b> DAMAGE TO RENTED PREMISES (Ea occurrence) \$ <b>500,000</b> MED EXP (Any one person) \$ <b>10,000</b> PERSONAL & ADV INJURY \$ <b>1,000,000</b> GENERAL AGGREGATE \$ <b>2,000,000</b> PRODUCTS - COMP/OP AGG \$ <b>2,000,000</b> \$
<b>A</b>	<input checked="" type="checkbox"/> <b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY			<b>TRA1938311</b>	<b>11/01/2020</b>	<b>11/01/2021</b>	COMBINED SINGLE LIMIT (Ea accident) \$ <b>1,000,000</b> BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
<b>A</b>	<input checked="" type="checkbox"/> <b>UMBRELLA LIAB</b> <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED \$ RETENTION \$			<b>TRA1938311</b>	<b>11/01/2020</b>	<b>11/01/2021</b>	EACH OCCURRENCE \$ <b>5,000,000</b> AGGREGATE \$ <b>5,000,000</b> \$
<b>B</b>	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	<b>Y/N</b> <b>N</b>	<b>N/A</b>	<b>03-0000070398-05</b>	<b>11/01/2020</b>	<b>11/01/2021</b>	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ <b>500,000</b> E.L. DISEASE - EA EMPLOYEE \$ <b>500,000</b> E.L. DISEASE - POLICY LIMIT \$ <b>500,000</b>
<b>C</b>	<b>Contractors Pollut</b>			<b>670972773001</b>	<b>11/01/2020</b>	<b>11/01/2021</b>	<b>Ea Claim</b> <b>1,000,000</b>
<b>C</b>	<b>Transportation Pol</b>			<b>670972773001</b>	<b>11/01/2020</b>	<b>11/01/2021</b>	<b>Aggregate</b> <b>1,000,000</b>

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

**CERTIFICATE HOLDER****DNREC10**

**DNREC**  
**89 Kings Hwy**  
**Dover, DE 19901**

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

## Section 5.2 OPERATIONAL PLAN

- a. Spill Reporting & Clean Up:
  - i. All drivers have a cell phone and carry five gallons of lime
  - ii. All small spills are to be covered with lime, washed down with water and vacuumed up. The driver is to call the office to report the spill.
  - iii. On a larger spill the driver is to report the spill to the office. We would then dispatch help in the form of additional manpower and/or a second truck on an as needed basis.
  - iv. Our spill plan uses Service Energy as backup pumper and manpower.
- b. Plans for Clean Vehicles:
  - i. The driver rinses the truck on an as needed basis.
  - ii. The trucks are washed bi-weekly.
- c. Record Keeping Procedures:
  - i. Drivers fill out a daily ticket for each customer pumped. We use This ticket to verify customers, gallons pumped and type of liquid pumped. The information on ticket is converted to an invoice.
  - ii. The invoice is used to bill customers.
  - iii. All driver cards, driver invoices and billings are kept on file for seven year.
- d. Days and Hours of Operation:
  - i. Monday – Friday 8:00am – 4:30pm , Emergency calls 24 hrs.





## Verification Certificate

This is to certify that Bond No. 44BSBD05526 issued by the member company of The Hartford  
subscribing this certificate, dated September 8, 2021  
in the amount of Fifty-Five Thousand Dollars  
\$55,000.00

on behalf of Clean Delaware, LLC, as Principal,  
and in favor of State of Delaware, as Obligees,  
covers an indefinite term which began on September 8, 2021, and ends with the cancellation of  
said bond; that said bond is now in full force and effect and will continue in full force and effect until cancelled.

**ANNIVERSARY PREMIUM PERIOD:** September 8, 2021 - September 8, 2022

Signed, Sealed, and Dated June 10, 2021

Attest or Witness

*Shelby Wiggins*

Surety

Hartford Fire Insurance Company

By:

*Joelle L LaPierre*  
Joelle L LaPierre, Attorney in fact





## **Section B. Grease trap waste**

Disposal Sites:

- 1) Land application at Clean Delaware Fields per AGU 1702-S-02
- 2) Delcora, Chester, PA

## **Section C. Portable Toilets**

Disposal Site:

- 1) Clean Delaware Lime stabilization plant, Rt 30 Milton

## **Section D. Municipal and Industrial Biosolids & Sludge from Package Treatment Plants**

Facilities (all pretreatment is aerobic digestion)

- 1) City of Lewes 150,000 gal per year disposed at Delcora
- 2) Town of Milton 150,000 gal per year disposed at Delcora
- 3) Town of Selbyville 650,000 gal per year disposed at Delcora and Clean Delaware Fields
- 4) Artesian Resources Beaver Creek 200,000 per year disposed at Delcora
- 5) Tidewater Utilities Country Grove 120,000 gal per year disposed at Delcora
- 6) Tidewater Utilities Bayfront 120,000 gal per year disposed at Delcora
- 7) Tidewater Utilities Ridings of Rehoboth 60,000 gal per year disposed at Delcora
- 8) Tidewater Utilities Harts landing 48,000 gal per year disposed at Delcora
- 9) Tidewater Utilities Retreat at Love Creek 72,000 gal per year disposed at Delcora

Lab Data Town of Selbyville (see attached)

## **Section E. Other Non Hazardous Liquid wastes**

- 1) Brewery waste – Dogfish head Brewery
- 2) Fresh Water Treatment Plant iron sludge – Artesian Bayville, Bethany, Frankford
- 3) Poultry de-boning waste – Allen Harim Foods



# ENVIROCORP LABORATORIES INC.

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
www.envirocorplabs.com

ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER



Town of Selbyville

Project: Sludge - PPS

P.O. Box 106

Project Number:

Selbyville, DE 19975

Reported: 01/27/2021 09:16

## Analytical Results

Sample ID: Sludge Composite

Sample Start: 01/11/21 08:45

Lab ID: 2100299-01

Matrix: Sludge

Received: 01/11/21 13:12

Sample Type: Composite

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
---------	--------	-------	-----------------	-----------	--------	---------------	---------------	---------

### Inorganic

% Solids	2.85	%	0.100		SM2540-G	1/11/21 16:17	1/13/21 09:50	HM
Cyanide	1.84	mg/kg dry	0.100		SM4500-CN-E	1/18/21 13:27	1/22/21 12:10	JMW
Ammonia as N	0.003	% dry	0.002		SM4500-NH3-G	1/25/21 9:44	1/25/21 11:40	CK
Nitrate+Nitrite as N	0.0464	% dry	0.00176		SM4500-NO3-H	1/25/21 9:54	1/25/21 11:44	CK
Oil & Grease	46.9	mg/L	5.00		EPA 1664A	1/21/21 10:11	2/2/00 13:50	MJM
Organic Nitrogen as N	9.77	% dry			[CALC]	1/26/21 13:16	1/26/21 13:57	CK
pH	7.23	SU			SM4500-H+/B	1/12/21 17:06	1/12/21 17:06	JB
Total Kjeldahl Nitrogen	9.77	% dry	0.351		SM4500-Norg-C	1/26/21 13:16	1/26/21 13:57	CK
Total Nitrogen as N	9.82	% dry			[CALC]	1/26/21 13:16	1/26/21 13:57	CK
Total Phosphorus as P	2.88	% dry	0.351		SM4500-P-F	1/26/21 13:12	1/26/21 13:51	CK

### Metals

Silver	1.44	mg/kg dry	0.226		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Arsenic	7.29	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Beryllium	1.03	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Cadmium	0.919	mg/kg dry	0.226		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Chromium	29.9	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Copper	191	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Potassium	4820	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Molybdenum	6.42	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Nickel	23.2	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Lead	19.9	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Antimony	1.41	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Selenium	5.42	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Thallium	3.48	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW
Zinc	1030	mg/kg dry	0.453		EPA 6010	1/26/21 7:00	1/26/21 12:36	JMW



# ENVIROCORP LABORATORIES INC.

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
www.envirocorplabs.com

ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER



Town of Selbyville

Project: Sludge - PPS

P.O. Box 106

Project Number:

Selbyville, DE 19975

Reported: 01/27/2021 09:16

## Analytical Results

Sample ID: Sludge Grab #1

Sample Start: 01/11/21 08:48

Lab ID: 2100299-02

Matrix: Sludge

Sample Type: Grab

Received: 01/11/21 13:12

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
---------	--------	-------	-----------------	-----------	--------	---------------	---------------	---------

### Microbiology

Fecal Coliform	26600	#/g TS dry	355		Collert-18	1/11/21 14:45	1/12/21 09:01	RD
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### Inorganic

% Solids	2.82	%	0.100		SM2540-G	1/11/21 16:17	1/13/21 09:50	HM
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State Permit Number: AGU 1702-S-03  
Effective Date: January 1, 2017  
Expiration Date: December 31, 2021



AUTHORIZATION TO OPERATE A LAND TREATMENT SYSTEM  
FOR THE  
AGRICULTURAL UTILIZATION OF SLUDGE AND WASTE PRODUCTS

1. Pursuant to the provisions of 7 Del. C., §6003

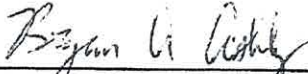
Clean Delaware, LLC.  
P. O. Box 123  
Milton, Delaware 19968-0123

is hereby granted a permit to operate a land treatment system for:

- the agricultural utilization of stabilized sludge generated in the treatment of wastewater in Delaware and other land treatable wastes approved by the Department of Natural Resources and Environmental Control;
- the agricultural utilization of lime stabilized septage and holding tank waste; and,
- approved wastewater treatment residuals.

This permit is limited to the application of above materials to the application site(s) designated in this permit.

2. The application rates, monitoring requirements and other permit conditions are set forth in Parts I, II and III hereof.

  
Bryan A. Ashby, Program Manager  
Surface Water Discharges Section  
Division of Water  
Department Of Natural Resources  
and Environmental Control

12/30/16

Date Signed





STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES &  
ENVIRONMENTAL CONTROL  
DIVISION OF WATER  
89 KINGS HIGHWAY  
DOVER, DELAWARE 19901

Surface Water Discharges Section

Telephone: (302) 739-9946  
Facsimile: (302) 739-8369

July 16, 2021

Mr. Gerry Desmond  
Clean Delaware, LLC.  
P.O. Box 123  
Milton, DE 19968

RE: List of Approved Land Application Materials

Dear Mr. Desmond:

On July 13, 2021, The Department of Natural Resources and Environmental Control, Surface Water Discharges Section (the Department) received email correspondence from Clean Delaware, LLC. (Clean Delaware). In the correspondence, Clean Delaware requested approval to land apply Allen Harim de-boning non sanitary waste which is generated during the de-boning process at the Allen Harim Millsboro Delaware facility. Additionally, Clean Delaware reviewed and provided an update to the current list of approved materials which was last updated in 2016.

Clean Delaware's request to land apply Allen Harim de-boning non sanitary waste is approved provided that all applicable requirements in State Permit Number AGU 1702-S-03 are met. This letter shall serve as an update to the Department's October 11, 2016 summary of locations from where Clean Delaware has approval to accept sludge, septage, and other land treatable wastes. Both the addition of the Allen Harim de-boning waste and the removal of Angola Beach Estates Class B sanitary sludge are reflected in the updated list of approved materials listed below.

Clean Delaware is approved to accept sludge, septage, and land treatable waste from the following locations provided that the land application of the materials in accordance with State Permit Number, AGU 1702-S-03 and Part III and V of the Department's Guidance and Regulations Governing the Land Treatment of Wastes:

**Class B sanitary sludges:**

- Allen's Harim Foods, LLC., Harbeson Plant
- Perdue Georgetown Sludge
- Town of Bridgeville
- Town of Lewes
- Town of Milton
- Town of Selbyville

Mr. Gerry Desmond  
Clean Delaware, LLC.  
July 16, 2021

**Septage and other sanitary wastes that are required to undergo Class B pathogen reduction by lime stabilization, at the Clean Delaware Milton Facility lime stabilization facility, prior to land application:**

- Artesian Resources community wastewater systems
- B Brittingham
- Dukes Septic Services
- Harry Caswell, Inc.
- Hopkins Construction
- McMullen Septic Service, Inc.
- Midway Services, Inc.
- Mobile Gardens M.H.P.
- Service Energy, LLC.
- Tidewater Utilities community wastewater systems
- Streett Sanitation Services / Tony Streett & Sons Septic
- Willey & Co., Inc.
- Additionally, wastes from various holding tanks, septic tanks, and pump and haul locations serviced and transported by Clean Delaware under Waste Haulers Permit WH-13.

**Non-sanitary wastes:**

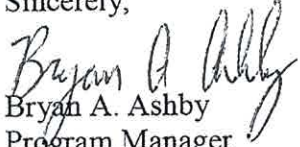
- Allen Harim de-boning waste
- Dogfish Head Craft Brewery - brewery waste water
- Eastern Shore Poultry Products - food from processed grease
- Iron Sludge from water treatment plants
- Perdue Farms, Georgetown - dewatered sludge cake
- RAPA Scrapple, Inc. grease by-products
- Restaurant grease trap waste (containing no sanitary waste)
- Roos Foods, Inc., dairy waste

Before receiving any sludge, septage, and/or waste from any of the facilities above, the waste hauler must have a valid Delaware Waste Transporters Permit (if applicable). Additionally, in accordance with State Permit Number AGU 1702-S-03 (as amended), Clean Delaware must submit analytical data and prove that pathogen reduction methods (where applicable) have been achieved BEFORE any sludge/waste can be accepted for application.

This approval is valid only as long as the State Permit Number, AGU 1702-S-03 is effective, administratively extended, and/or renewed. Clean Delaware must receive separate written approval from the Department before receiving sludge, septage and/or waste products that are not referenced in this letter.

Should you have any questions, please feel free to contact me at (302) 739-9946.

Sincerely,

  
Bryan A. Ashby  
Program Manager  
Surface Water Discharges Section



DELAWARE COUNTY REGIONAL WATER QUALITY CONTROL AUTHORITY  
P.O. Box 999 • Chester, PA 19016-0999

March 1, 2021

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Gerry Desmond  
Clean Delaware, LLC  
P.O. Box 123  
Milton, DE 19968

RE: Septic Waste Hauler Permit #012021

Dear Mr. Desmond:

DELCORA has completed its review of your Permit Application and Certificate of Insurance, and all documents are in order.

Enclosed is Permit #012021, which is valid for two (2) years. A copy of DELCORA Resolution #2011-08 and price list are also enclosed.

Sincerely,

Christopher L. Lenton  
Facilities Superintendent

CLL:smf  
Enclosures

CC: via email link w/complete permit & application  
M. DiSantis  
M. Dorrin, Jr.  
I. Fitzgerald  
M. Krause  
B. Newman  
D. Zetusky  
Permit File w/complete permit & original application

ADMINISTRATION

☐ 610-876-5523  
☐ FAX: 610-876-2728

CUSTOMER SERVICE/BILLING

☐ 610-876-5526  
☐ FAX: 610-876-1460

PURCHASING & STORES

☐ 610-876-5523  
☐ FAX: 610-497-7959

PLANT & MAINTENANCE

☐ 610-876-5523  
☐ FAX: 610-497-7950



DELAWARE COUNTY REGIONAL WATER  
QUALITY CONTROL AUTHORITY  
(DELCORA)

WASTE HAULER PERMIT

FOR SEPTAGE OF DOMESTIC ORIGIN, HOLDING TANKS,  
DOMESTIC OR INDUSTRIAL WASTEWATER, GREASE TRAPS

PERMIT #012021


Waste Hauler's Name: CLEAN DELAWARE, LLC  
Mailing Address: P.O. BOX 123, MILTON, DE 19968  
Authorized Representative: GERRY DESMOND  
Phone / FAX: 302-684-4221 / 302-684-1850  
Email:

is hereby authorized to discharge hauled septage to the Western Regional Treatment Plant (WRTP) located at 3201 West Front Street, Chester, Pennsylvania in accordance with the conditions set forth in this permit and Standard Conditions for Permits. Compliance with this permit does not relieve the permittee of its obligation to comply with any or all applicable pretreatment regulations, standards, or requirements under Federal, State, or local laws, including any such regulations, standards, requirements, or laws that may become effective during the term of this permit.

Noncompliance with any term or condition of this permit shall constitute a violation of the DELCORA Standards, Rules and Regulations of the Western Service Area, as amended, and Resolution No. 2011-08, as amended.

This permit shall become effective on **March 1, 2021** and shall expire at midnight on **March 31, 2023 (2-year term to last day of permit month)**.

If the permittee wishes to continue to discharge after the expiration date of this permit, an application must be filed for a renewal permit in accordance with the requirements of **Section A, No. 10 – Duty to Reapply**, a minimum of 60 days prior to the expiration date.

By:   
Christopher L. Lenton  
Facilities Superintendent

Issued this **1<sup>ST</sup>** day of **March 2021**

Rev. 6-2019



**gerry**

---

**From:** John Messina <John.Messina@CO.KENT.DE.US>  
**Sent:** Monday, July 19, 2021 11:09 AM  
**To:** John Messina  
**Subject:** Permit thank you letter 2021  
**Attachments:** 8-10-21 hauler class.pdf; 2021 hauler thank you letter.pdf  
  
**Importance:** High

Attached is a letter thanking you for renewing your 2021-2022 hauler permit(s) with Kent County Public Works. Also attached is a class that Delaware Rural Water is putting on for hauler drivers on August 10th.

Thanks, John :)

---

John Messina Jr.	
Environmental Technician	Phone: (302) 335-6000
Kent County Public Works	Cell: (302) 363-0497
139 Milford Neck Rd.	Fax: (302)335-0365
Milford,DE 19963	
john.messina@co.kent.de.us	

Kent



County

## Department of Public Works

Wastewater Facilities (302) 335-6000  
Engineering Division (302) 744-2430  
Facilities Management (302) 744-2357

139 Milford Neck Rd  
Milford DE 19963  
Fax (302) 335-0365

July 20, 2021

Dear Sir or Madam,

We would like to thank you for working with us renewing your waste hauler permit(s) for the 2021-2022 fiscal year. Next year we will do the same process and get your permits renewed before they expire on June 30<sup>th</sup> 2022. Please let us know during the year if you add or remove trucks or change tank sizes. Feel free to reach out to us with any questions or concerns throughout the year. My email is [john.messina@co.kent.de.us](mailto:john.messina@co.kent.de.us) and my cell number is (302) 363-0497. Thanks again!

Sincerely,

John Messina Jr.  
Environmental Technician I

## ENGINEERING DEPARTMENT

ADMINISTRATION	(302) 855-7718
AIRPORT & INDUSTRIAL PARK	(302) 855-7774
ENVIRONMENTAL SERVICES	(302) 855-7730
PUBLIC WORKS	(302) 855-7703
RECORDS MANAGEMENT	(302) 854-5033
UTILITY ENGINEERING	(302) 855-7717
UTILITY PERMITS	(302) 855-7719
UTILITY PLANNING	(302) 855-1299
FAX	(302) 855-7799



## Sussex County

DELAWARE  
[sussexcountyde.gov](http://sussexcountyde.gov)

HANS M. MEDLARZ, P.E.  
COUNTY ENGINEER

June 22, 2021

Clean Delaware, Inc.  
P. O. Box 123  
Milton, DE 19968

REF: SUSSEX COUNTY HAULERS LICENSE NO: 6

To whom it may concern:

I am pleased to inform you that your Sussex County Wastewater Hauler License has been approved. The items you recently provided complete our requirements.

The Sussex County Engineering Department authorizes you to discharge wastewater for treatment at the South Coastal Regional Wastewater Facilities (SCRWF) and Inland Bays Wastewater Facilities. Discharges will be according to procedures established for the Sussex County Septage Program. SCRWF and Inland Bays will accept liquid and solid materials pumped from a septic tank, cesspool, or holding tank in Sussex County. Industrial wastewater will not be accepted.

This authorization is effective immediately and will expire June 30, 2022. To keep the authorization effective through the expiration date, you must give this office copies of renewed insurance certificates and your business license before they expire.

Should you have any questions, please do not hesitate to contact me at (302) 855-7701.

Sincerely,

Blair Lutz  
Utility Account Specialist III

cc: Katrina Mears

Paula Marvel

Katharyn S. Potter





SUSSEX COUNTY ENGINEERING DEPARTMENT

SUSSEX COUNTY, DELAWARE

SUSSEX COUNTY

# SEPTIC TANK WASTE HAULERS LICENSE

Clean Delaware, Inc.

has met the licensing, bonding and insurance requirements of Section 110-113,  
Sussex County Code, and is hereby granted License No. 6 to perform such  
Waste Hauler work as regulated in said Code.

License expires June 30, 2022

*[Handwritten signature]*





STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES &  
ENVIRONMENTAL CONTROL  
DIVISION OF WATER  
89 KINGS HIGHWAY  
DOVER, DELAWARE 19901

Surface Water Discharges Section

Telephone: (302) 739-9946  
Facsimile: (302) 739-8369

July 16, 2021

Mr. Gerry Desmond  
Clean Delaware, LLC.  
P.O. Box 123  
Milton, DE 19968

RE: List of Approved Land Application Materials

Dear Mr. Desmond:

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- Perdue Georgetown Sludge
- Town of Bridgeville
- Town of Lewes
- Town of Milton
- Town of Selbyville

Mr. Gerry Desmond  
Clean Delaware, LLC.  
July 16, 2021

**Septage and other sanitary wastes that are required to undergo Class B pathogen reduction by lime stabilization, at the Clean Delaware Milton Facility lime stabilization facility, prior to land application:**

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- B Brittingham
- Dukes Septic Services
- Harry Caswell, Inc.
- Hopkins Construction
- McMullen Septic Service, Inc.
- Midway Services, Inc.
- Mobile Gardens M.H.P.
- Service Energy, LLC.
- Tidewater Utilities community wastewater systems
- Streett Sanitation Services / Tony Streett & Sons Septic
- Willey & Co., Inc.
- Additionally, wastes from various holding tanks, septic tanks, and pump and haul locations serviced and transported by Clean Delaware under Waste Haulers Permit WH-13.

**Non-sanitary wastes:**

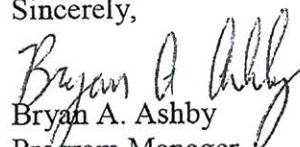
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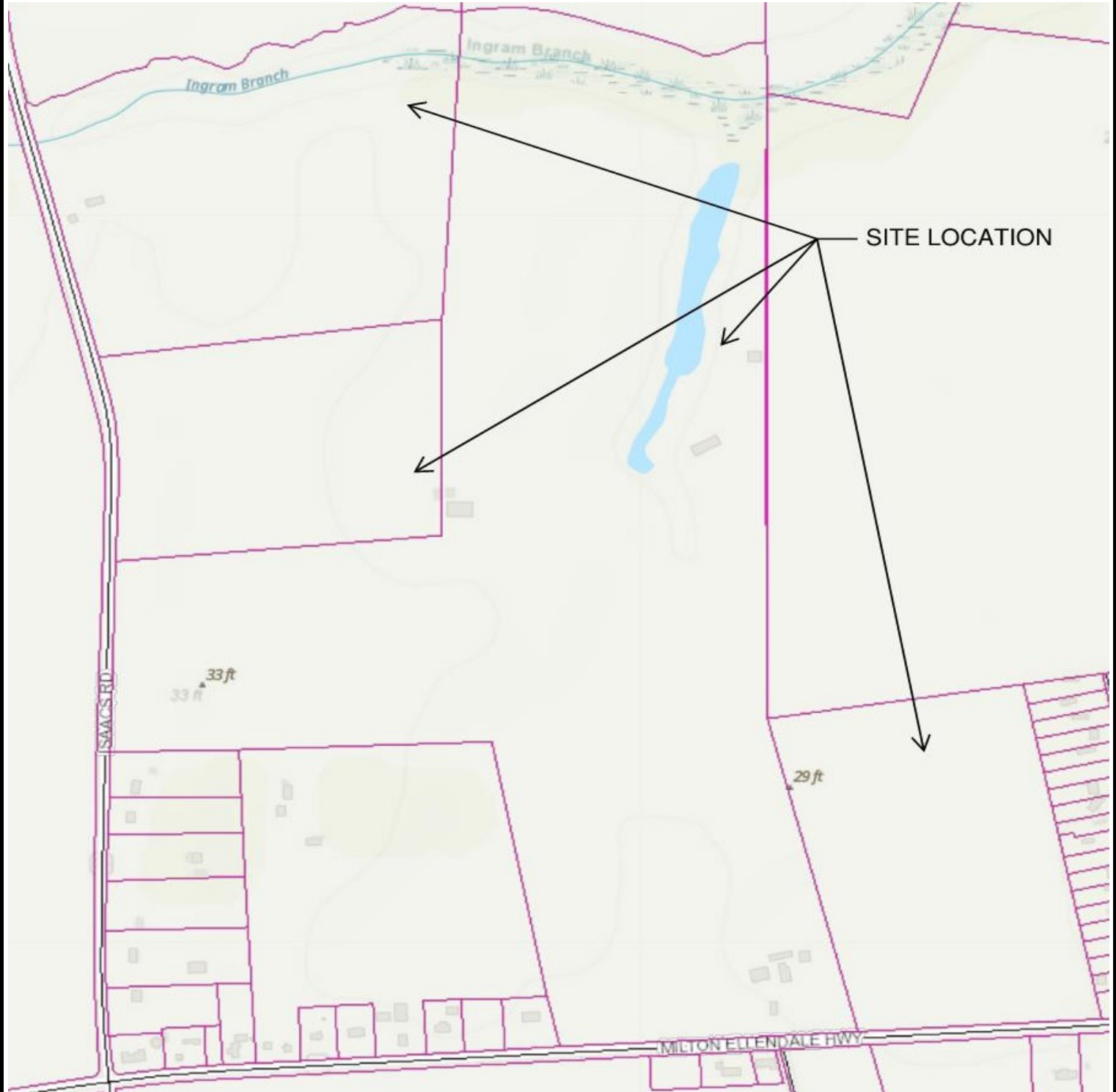
Should you have any questions, please feel free to contact me at (302) 739-9946.

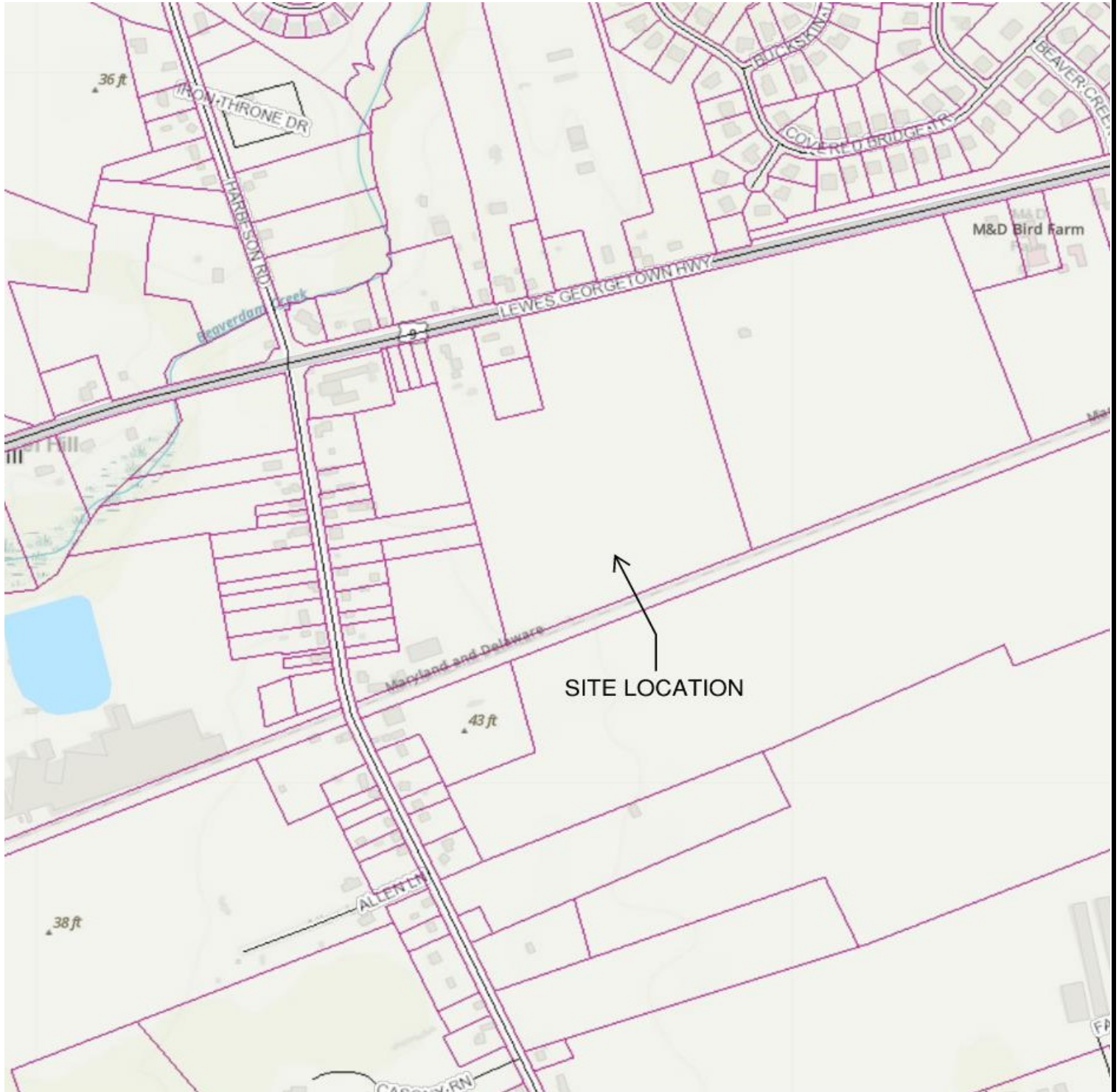
Sincerely,

  
Bryan A. Ashby  
Program Manager  
Surface Water Discharges Section



**DELAWARE - SITE MAP  
MILTON FARM**









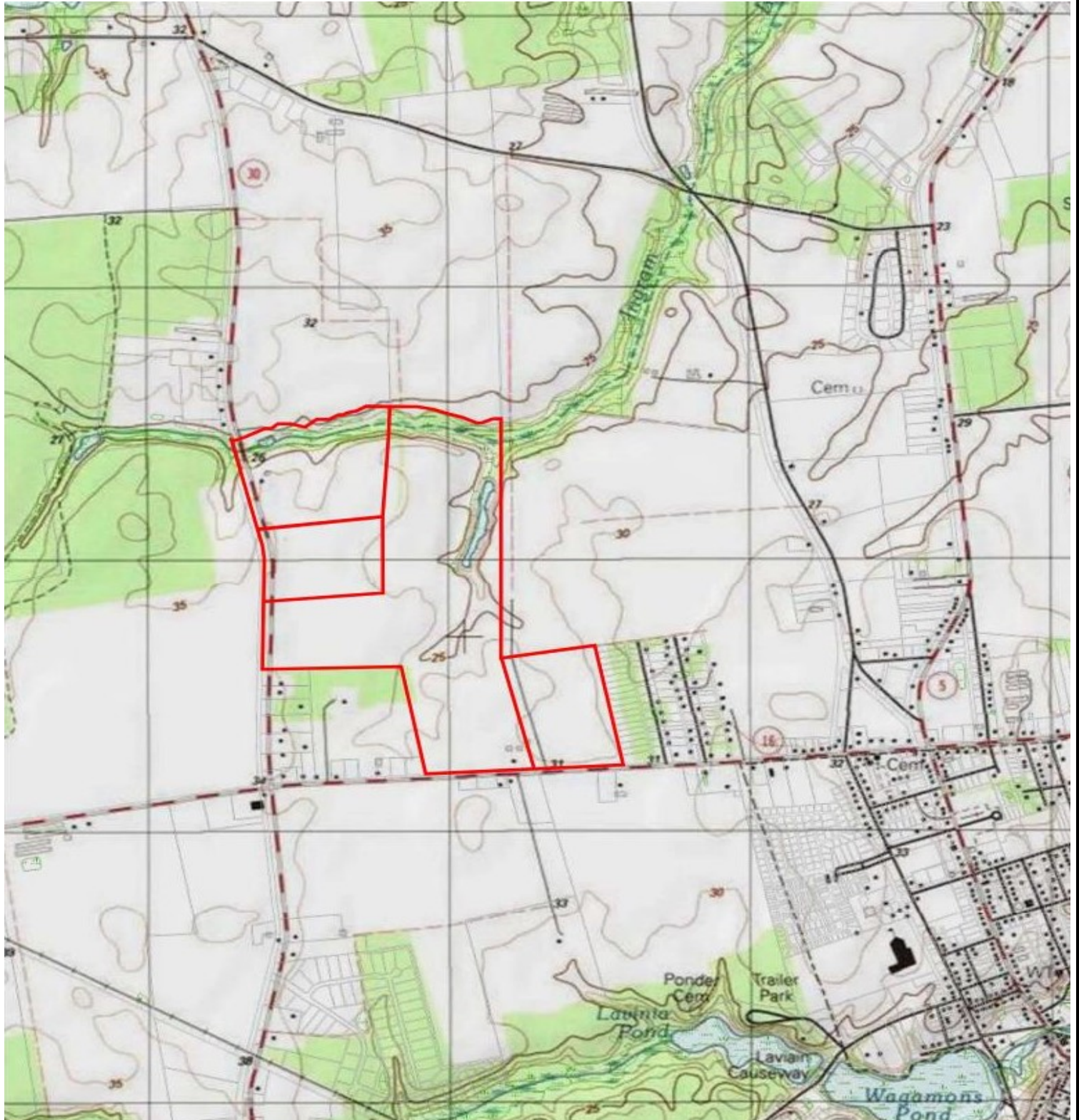




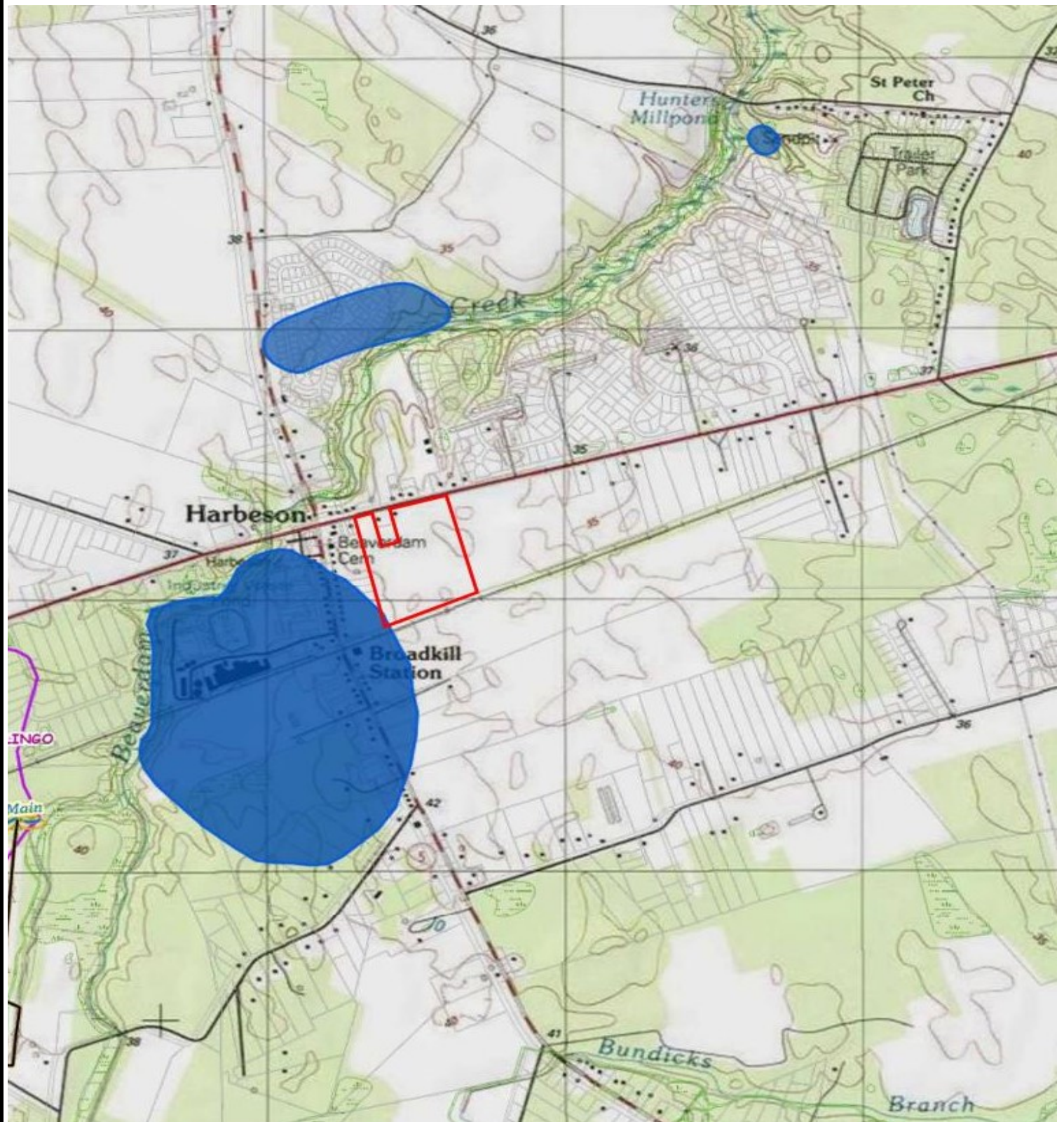
**DELAWARE - SUSSEX COUNTY**  
**HARBESON FARM**





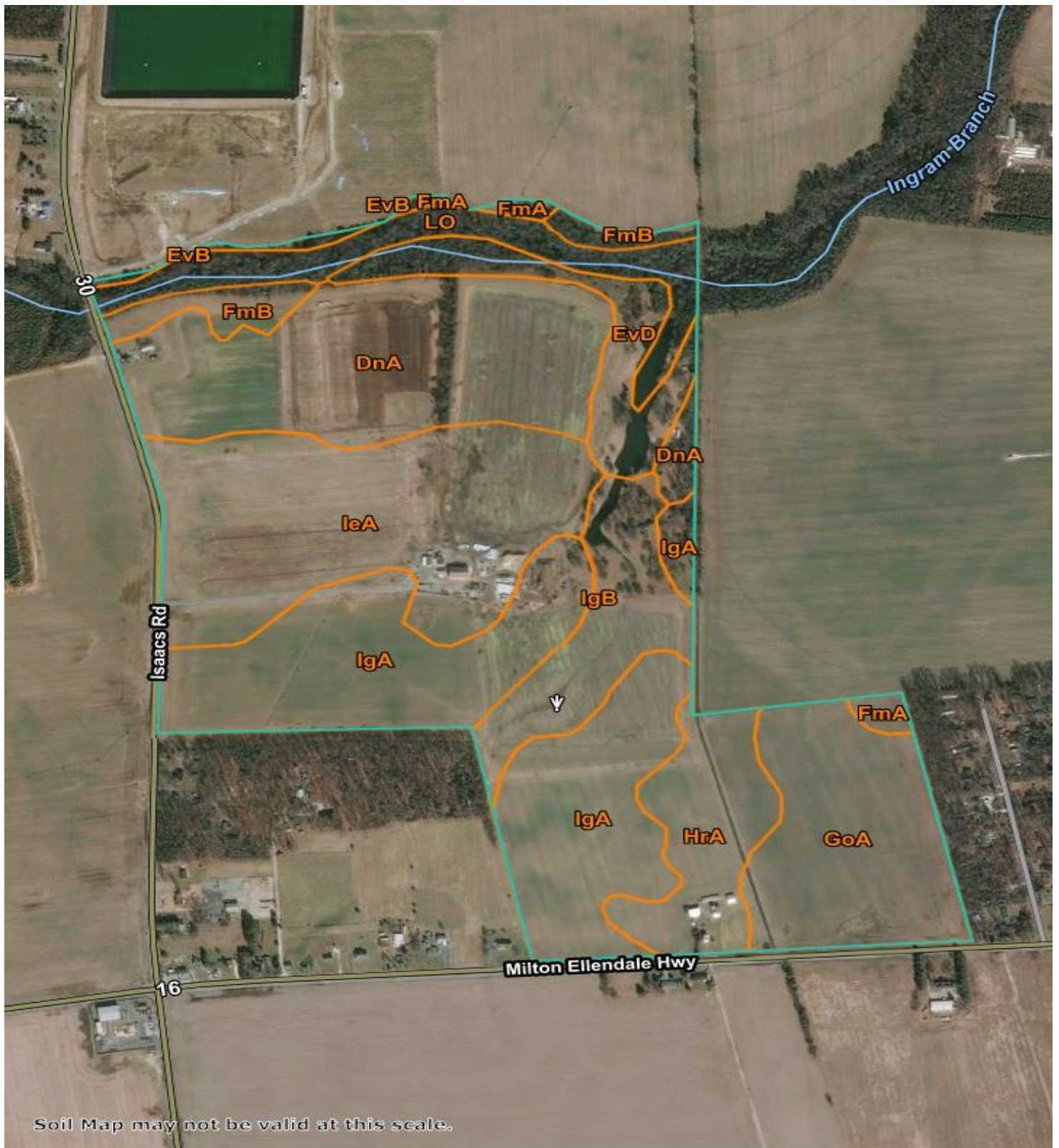








**DELAWARE - NRCS SOIL MAP  
MILTON FARM**







# DELAWARE - NRCS SOIL MAP HARBESON FARM







**DELAWARE - DNREC NAVMAP**  
**MILTON FARM**







**DELAWARE - DNREC NAVMAP**  
**HARBESON FARM**



# **APPENDIX B**

## **BARRS REPORTING**



Delaware Biosolids and Residuals Reporting System (BARRS)  
Land Application Facility Information Sheet

**Facility :**

Name Clean Delaware

Address P.O. Box 123

City/St. Milton, DE

Zip 19968

Phone (302) 684-4221

Watershed Broadkill

**Permit:**

Permit # 1702-S-03

Issued 1/1/2017

Expires 12/31/2021

Reporting Year 2021

Biosolids received out of state ( Y/N ) N

Biosolids sent out of state ( Y/N ) Y

**Personal:**

**Operator- in- Charge**

Name Gerry Desmond

Title General Manager

License # 514

Grade II

Phone (302) 684-4221

Fax (302) 684-1850

E-Mail gerry@cleandelaware.com

**Responsible Official**

Name \_\_\_\_\_

Title \_\_\_\_\_

License # \_\_\_\_\_

Grade \_\_\_\_\_

Phone \_\_\_\_\_

Fax \_\_\_\_\_

E-Mail \_\_\_\_\_

**Biosolids/Residuals Contact Person**

Name Gerry Desmond

Title General Manager

License # 514

Grade II

Phone (302) 684-4221

Fax (302) 684-1850

E-Mail gerry@cleandelaware.com





Delaware Biosolids and Residuals Reporting System (BARRS)  
Land Application Facility Information Sheet

**Facility :**

Name Clean Delaware, LLC  
Address P.O. Box 123  
City/St. Milton, DE  
Zip 19968  
Phone 302-684-4221  
Watershed \_\_\_\_\_

**Permit:**

Permit # AGU 1702 S-03  
Issued 1/1/2017  
Expires 12/31/2021  
Reporting Year 2021

Biosolids received out of state ( Y/N ) N  
Biosolids sent out of state ( Y/N ) Y

**Personal:**

**Operator- in- Charge**

Name Gerry Desmond  
Title General Manager  
License # 514  
Grade II  
Phone 302-684-4221  
Fax 302-684-1850  
E-Mail gerry@cleandelaware.com

**Responsible Official**

Name same  
Title \_\_\_\_\_  
License # \_\_\_\_\_  
Grade \_\_\_\_\_  
Phone \_\_\_\_\_  
Fax \_\_\_\_\_  
E-Mail \_\_\_\_\_

**Biosolids/Residuals Contact Person**

Name same  
Title \_\_\_\_\_  
License # \_\_\_\_\_  
Grade \_\_\_\_\_  
Phone \_\_\_\_\_  
Fax \_\_\_\_\_  
E-Mail \_\_\_\_\_

# Pathogen and Vector Sheet - Land Application

## Pathogen Reduction

Facility

Clean Delaware, LLC

Monitoring Year

2021

### Class A (PFRP)

	Material Number(s)
Alternative 1 (+ elevated temp for specified time)	_____
Alternative 2 (+ pH adjust for specified time/temp)	_____
Alternative 3 (+ virus and helminth criteria)	_____
Alternative 4 (+ other virus and helminth criteria)	_____
Alternative 5 (indicate which PFRP)	
(a) composting	_____
(b) heat drying	_____
(c) heat treatment	_____
(d) thermophilic aerobic digestion	_____
(e) beta ray irradiation	_____
(f) gamma ray irradiation	_____
(g) pasteurization	_____
Alternative 6 (attach PFRP equivalent documentation)	_____

### Class B (PSRP)

	Material Number(s)
Alternative 1 (geometric mean of 7 samples)	4,5
Alternative 2 (indicate which PSRP)	_____
(a) aerobic digestion	_____
(b) air drying	_____
(c) anaerobic digestion	_____
(d) composting	_____
(e) lime stabilization	1,5
Alternative 3 (attach PSRP equivalent)	_____

### No Pathogen Reduction

	Material Number(s)
Part V Wastes	2,3

### Vector Attraction Reduction Method Used

	Material Number(s)	List of Materials
Option 1 (minimum 38 percent reduction in volatile solids)	_____	1 Clean Delaware spray effluent
Option 2 (anaerobic process, with bench-scale demonstration)	_____	2 Grease
Option 3 (aerobic process, with bench scale demonstration)	_____	3 Dogfishhead brewery waste
Option 4 (specific oxygen uptake rate (SOUR), aerobically digested)	_____	4 Selbyville
Option 5 (aerobic process plus raised temperature)	_____	5 Clean Delaware liquid sludge
Option 6 (raise pH to 12 and retain at 11.5)	1	6 _____
Option 7 (75% solids with no unstabilized solids)	_____	7 _____
Option 8 (90% solids with unstabilized solids)	_____	8 _____
Option 9 (injection below land surface w/significant soil coverage)	4,5	9 _____
Option 10 (incorporation into soil in accordance with permit)	2,3	10 _____
		11 _____
		12 _____

\*\* Attach all Pathogen Reduction and Vector Attraction Reduction documentation for the reporting year to demonstrate compliance.

# Field Summary Sheet - Land Application (1 Per Field)

Facility Clean Delaware, LLC

Permit No. AGU 1702 S-03

Application Year 2021

Field

Total Acres

Applied Acres

	APPLIED								PPM (no data entry)			Pounds
	Material	Gallons	lbs/gal	Cal Wet lbs	Wet lbs	% Solids	Dry Lbs	Dry Tons	Org N	Ammonia*	N02+N03	Org N
1			8.34	0			0	0.00	0	0	0	0
2			8.34	0			0	0.0	0	0	0	0
3			8.34	0			0	0.0	0	0	0	0
4			8.34	0			0	0.0	0	0	0	0
5			8.34	0			0	0.0	0	0	0	0
6			8.34	0			0	0.0	0	0	0	0
7			8.34	0			0	0.0	0	0	0	0
8			8.34	0			0	0.0	0	0	0	0
9			8.34	0			0	0.0	0	0	0	0
10			8.34	0			0	0.0	0	0	0	0

	Gallons	Wet lbs	Dry Lbs	Dry Tons	Total Org N
Yearly Field Totals	0	0	0	0	0

	Percent ***								Pounds			
	Material	Org N	Ammonia*	N02+N03	PAN/Org N	P	K	Min Factor**	PAN Org N	P	K	Tot. PAN**
1 0					0				0	0	0	0
2 0					0				0	0	0	0
3 0					0				0	0	0	0
4 0					0				0	0	0	0
5 0					0				0	0	0	0
6 0					0				0	0	0	0
7 0					0				0	0	0	0
8 0					0				0	0	0	0
9 0					0				0	0	0	0
10 0					0				0	0	0	0

	PAN Org N	P	K	Tot. PAN**
Yearly Field Totals	0	0	0	0



# Metals Sheet (1 Per Field)

Field 0

Acres Applied 0

PPM											
Material	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc	
1	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
2	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
3	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
4	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
5	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
6	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
7	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
8	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
9	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
10	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
Yearly Totals	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
Previous Totals											pounds/ac
Cumulative Totals	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	pounds/ac
Cumulative Totals	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	kg/ha

Field 0

Acres Applied 0

### Mineralized Nitrogen\*\*\*

0

Total lbs organic N applied this yr. (Organic N X Mineralization factor\*\*) for this year

	Org. N Mineralized In 2021	Times (x)	Kmin**	Equals (=)	Mineralized N. Towards 2021
From 2020					0
From 2019					0
From 2018					0
Total mineralized nitrogen (previous 3 years )					0

### Additional Nutrients Applied (Nutrients from Fertilizer)

Total pounds of nitrogen from other sources	
Total pounds of phosphorus from other sources	
Total pounds of potassium from other sources	

### Organic N. Mineralization from 2021 Credited Towards Future Years

Amount of Organic Nitrogen Left to Mineralize for 2022	0
Amount of Organic Nitrogen Left to Mineralize for 2023	0
Amount of Organic Nitrogen Left to Mineralize for 2024	0

### TOTAL NUTRIENTS APPLIED TO FIELD THIS YEAR

Lbs PAN per Acre	#DIV/0!
Lbs P per Acre	#DIV/0!
Lbs K per Acre	#DIV/0!
Dry tons material ac.	#DIV/0!

### Notes

\*\* Kmin =

#### Mineralization factors

	Time /Yrs	Unstabilized	Aerobic	Anaerobic	Compost	Other Enter Info
This Year	0-1	0.4	0.30	0.20	0.10	
Last Year	1-2	0.2	0.15	0.10	0.05	
2 Years Ago	2-3	0.1	0.08	0.05	0.03	
3 Years Ago	3-4	0.05	0.04	0.03	0.03	

Note: Other mineralization factors may be used with DNREC aproval

\*\*\*\* PPM / 10,000 is equal to percent

P205 X 0.44 is equal to P

Percent X 10,000 is equal to PPM

Version 10/23/14

## Crop Report Sheet (1 Per Field)

Facility Clean Delaware, LLC

Total Acres  

Application Acres 

Field	
id	1
name	John Doe
email	john.doe@example.com
password	12345678
created_at	2023-01-01 12:00:00
updated_at	2023-01-01 12:00:00
deleted_at	
status	active
role	user
last_login	2023-01-01 12:00:00
is_verified	1
phone_number	
address	
bio	
avatar	
preferences	
social_links	
tags	
metadata	
notes	
comments	
likes	
shares	
reports	
notifications	
subscriptions	
payments	
invoices	
orders	
products	
categories	
tags	
reviews	
ratings	
feedback	
support_tickets	
help_center	
faq	
terms_of_service	
privacy_policy	
about_us	
contact_us	
newsletter	
newsletter_preferences	
newsletter_subscribers	
newsletter_unsubscribers	
newsletter_opt_outs	
newsletter_opt_ins	
newsletter_opt_out_reasons	
newsletter_opt_in_reasons	
newsletter_opt_out_dates	
newsletter_opt_in_dates	
newsletter_opt_out_locations	
newsletter_opt_in_locations	
newsletter_opt_out_devices	
newsletter_opt_in_devices	
newsletter_opt_out_browsers	
newsletter_opt_in_browsers	
newsletter_opt_out_operating_systems	
newsletter_opt_in_operating_systems	
newsletter_opt_out_networks	
newsletter_opt_in_networks	
newsletter_opt_out_providers	
newsletter_opt_in_providers	
newsletter_opt_out_countries	
newsletter_opt_in_countries	
newsletter_opt_out_languages	
newsletter_opt_in_languages	
newsletter_opt_out_currencies	
newsletter_opt_in_currencies	
newsletter_opt_out_timezones	
newsletter_opt_in_timezones	
newsletter_opt_out_locales	
newsletter_opt_in_locales	
newsletter_opt_out_scripts	
newsletter_opt_in_scripts	
newsletter_opt_out_styles	
newsletter_opt_in_styles	
newsletter_opt_out_fonts	
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newsletter_opt_out_lineheights	
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newsletter_opt_in_textaligns	
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newsletter_opt_in_textfontstyle	
newsletter_opt_out_textfontvariant	
newsletter_opt_in_textfontvariant	
newsletter_opt_out_textfontstretch	
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Application Year 2021

**Crop:**

	Crop #1	Crop #2	Crop #3
Crop(s) Grown			
3 highest of past 5 yields	In bushels/tons per acre		
1st			
2nd			
3rd			
Estimated Yield / AC	0.0	0.0	0.0
or UD Extension rec. yield			
Actual Yield / AC			
Month Crop Planted?			
Month Crop Harvested?			

**Next Reporting Year:**

Planned Crop(s)			
Proposed maximum PAN application rate (next year)		300	lb/ac

**Uptake\*:**

Lbs per Bushel

	<b>N</b>	<b>P</b>	<b>K</b>
Corn	1	0.18	0.25
Soybean	3.8	0.44	1.25
Wheat	1.3	0.22	0.29
Barley	1	0.18	0.25
Oats	0.7	0.13	0.2
Rye	1	0.22	0.2

Insert Crop Uptake Information - Uptake in lbs per bushel or lbs per ton


Portion of crop(s) harvested	
------------------------------	--

Crop(s) for human consumption? (Y/N)	
--------------------------------------	--

Periods of Land Application? [REDACTED]

## Nitrogen

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor			
Estimated Uptake/Ac	0	0	0
Total Estimated Uptake/AC	0		
Tot LBS PAN/AC applied			
Amount Over(+)/Under(-)	0		

Crop uptake/Acre 2020	
Pounds PAN app./Acre 2020	
Amount Over (+)/Under (-)	0

Crop uptake/Acre 2019	
Pounds PAN app./Acre 2019	
Amount Over (+)/Under (-)	0

\* A more complete crop library may be obtained from your county extension office.

## Phosphorus

Crop #1	Crop #2	Crop #3
0	0	0
0		
0		

	0

	0

## Potassium

Crop #1	Crop #2	Crop #3
0	0	0
	0	
	0	

	0

0

Notes:



# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S-I Facility Clean Delaware, LLC Sampling Frequency Requirements Met ( Y/N ) Y

Material Analyzed Clean Delaware Liquid Sludge Approved Methods (Y/N) Y Priority Pollutant This Year (Y/N) N

Metals Required ( Y/N ) Y Results in Dry Weight ( Y/N ) Y Monitoring Year 2021 Last Priority Pollutant Test 2019

	1st Period		2nd Period		3rd Period		4th Period	
<b>PARAMETERS</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>
Moisture content %	95.25	%	94.79	%	94.64	%		%
Total Nitrogen as N %	0.092	%	0.0952	%	0.0906	%		%
Organic Nitrogen %	0.0712	%	0.0721	%	0.0706	%		%
Ammonium as N %	0.021	%	0.0231	%	0.02	%		%
Nitrate Nitrogen as N %		%		%		%		%
Solids %	4.72	%	5.21	%	5.36	%		%
Phosphorus %	0.035	%	0.033	%	0.0424	%		%
Potassium %	0.00965	%	0.00815	%	0.0086	%		%
Volatile Solids %	2.46	%		%		%		%
pH	11.5	S.U.	11.6	S.U.	11.5	S.U.		S.U.
Arsenic	0.0859	(ppm)		(ppm)		(ppm)		(ppm)
Cadmium	0.0432	(ppm)		(ppm)		(ppm)		(ppm)
Chromium	0.359	(ppm)		(ppm)		(ppm)		(ppm)
Copper	9.61	(ppm)		(ppm)		(ppm)		(ppm)
Lead	0.406	(ppm)		(ppm)		(ppm)		(ppm)
Mercury	0	(ppm)		(ppm)		(ppm)		(ppm)
Molybdenum	0.0449	(ppm)		(ppm)		(ppm)		(ppm)
Nickel	0.298	(ppm)		(ppm)		(ppm)		(ppm)
Selenium	0.0889	(ppm)		(ppm)		(ppm)		(ppm)
Zinc	37.9	(ppm)		(ppm)		(ppm)		(ppm)
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
PCB's		(ppm)		(ppm)		(ppm)		(ppm)
Cyanide		ppm						
Sodium		ppm						
Calcium		ppm						
Magnesium		ppm						
Parameter E								
Parameter F								
Sample Date	<u>5/24/2021</u>		Sample Date			Sample Date		



# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S-I Facility Clean Delaware, LLC Monitoring Year 2021

Material Analyzed Clean Delaware Liquid Sludge

PARAMETERS	9th Period		10th Period		11th Period		12th Period		# Events	Cumulative Total	
	Results	Units	Results	Units	Results	Units	Results	Units	XXXXXXX	Average	Maximum
Moisture content %		%		%		%		%	3	94.89	95.25
Total Nitrogen as N %		%		%		%		%	3	0.09	0.0952
Organic Nitrogen %		%		%		%		%	3	0.07	0.0721
Ammonium as N %		%		%		%		%	3	0.02	0.0231
Nitrate Nitrogen as N %		%		%		%		%	0	#DIV/0!	0
Solids %		%		%		%		%	3	5.10	5.36
Phosphorus %		%		%		%		%	3	0.04	0.0424
Potassium %		%		%		%		%	3	0.01	0.00965
Volatile Solids %		%		%		%		%	1	2.46	2.46
pH		S.U.		S.U.		S.U.		S.U.	3	11.53	11.6
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)	1	0.09	0.0859
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)	1	0.04	0.0432
Chromium		(ppm)		(ppm)		(ppm)		(ppm)	1	0.36	0.359
Copper		(ppm)		(ppm)		(ppm)		(ppm)	1	9.61	9.61
Lead		(ppm)		(ppm)		(ppm)		(ppm)	1	0.41	0.406
Mercury		(ppm)		(ppm)		(ppm)		(ppm)	1	0.00	0
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)	1	0.04	0.0449
Nickel		(ppm)		(ppm)		(ppm)		(ppm)	1	0.30	0.298
Selenium		(ppm)		(ppm)		(ppm)		(ppm)	1	0.09	0.0889
Zinc		(ppm)		(ppm)		(ppm)		(ppm)	1	37.90	37.9
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g	0	#DIV/0!	0
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g	0	#DIV/0!	0
PCB's		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Parameter A									0	#DIV/0!	0
Parameter B									0	#DIV/0!	0
Parameter C									0	#DIV/0!	0
Parameter D									0	#DIV/0!	0
Parameter E									0	#DIV/0!	0
Parameter F									0	#DIV/0!	0

Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_

Notes:



# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S-I Facility Clean Delaware, LLC Sampling Frequency Requirements Met ( Y/N ) Y  
 Material Analyzed Clean Delaware Spray Approved Methods (Y/N) Y Priority Pollutant This Year (Y/N) N  
 Metals Required ( Y/N ) Y Results in Dry Weight ( Y/N ) Y Monitoring Year 2021 Last Priority Pollutant Test 2019

	1st Period		2nd Period		3rd Period		4th Period	
<b>PARAMETERS</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>
Moisture content %	99.7	%	99.8	%		%		%
Total Nitrogen as N %	10.3	%	0.906	%		%		%
Organic Nitrogen %	5.82	%	0.393	%		%		%
Ammonium as N %	4.49	%	0.454	%		%		%
Nitrate Nitrogen as N %	0.018	%	0.0587	%		%		%
Solids %	0.3	%	0.22	%		%		%
Phosphorus %	0.243	%	0.128	%		%		%
Potassium %	1.26	%	0.782	%		%		%
Volatile Solids %		%	0.024	%		%		%
pH	12.3	S.U.	11.8	S.U.		S.U.		S.U.
Arsenic		(ppm)	0.934	(ppm)		(ppm)		(ppm)
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)
Chromium		(ppm)	0.929	(ppm)		(ppm)		(ppm)
Copper		(ppm)	22.5	(ppm)		(ppm)		(ppm)
Lead		(ppm)	0.842	(ppm)		(ppm)		(ppm)
Mercury		(ppm)		(ppm)		(ppm)		(ppm)
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)
Nickel		(ppm)		(ppm)		(ppm)		(ppm)
Selenium		(ppm)		(ppm)		(ppm)		(ppm)
Zinc		(ppm)	61.1	(ppm)		(ppm)		(ppm)
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
PCB's		(ppm)		(ppm)		(ppm)		(ppm)
Cyanide		ppm						
Sodium		ppm						
Calcium		ppm						
Magnesium		ppm						
Parameter E								
Parameter F								

Sample Date 3/18/2021 Sample Date 5/24/2021 Sample Date 8/19/2021 Sample Date \_\_\_\_\_



# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S- Facility Clean Delaware, LLC Monitoring Year 2021

Material Analyzed Clean Delaware Spray

PARAMETERS	9th Period		10th Period		11th Period		12th Period		# Events	Cumulative Total	
	Results	Units	Results	Units	Results	Units	Results	Units	XXXXXXX	Average	Maximum
Moisture content %		%		%		%		%	2	99.75	99.8
Total Nitrogen as N %		%		%		%		%	2	5.60	10.3
Organic Nitrogen %		%		%		%		%	2	3.11	5.82
Ammonium as N %		%		%		%		%	2	2.47	4.49
Nitrate Nitrogen as N %		%		%		%		%	2	0.04	0.0587
Solids %		%		%		%		%	2	0.26	0.3
Phosphorus %		%		%		%		%	2	0.19	0.243
Potassium %		%		%		%		%	2	1.02	1.26
Volatile Solids %		%		%		%		%	1	0.02	0.024
pH		S.U.		S.U.		S.U.		S.U.	2	12.05	12.3
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)	1	0.93	0.934
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Chromium		(ppm)		(ppm)		(ppm)		(ppm)	1	0.93	0.929
Copper		(ppm)		(ppm)		(ppm)		(ppm)	1	22.50	22.5
Lead		(ppm)		(ppm)		(ppm)		(ppm)	1	0.84	0.842
Mercury		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Nickel		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Selenium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Zinc		(ppm)		(ppm)		(ppm)		(ppm)	1	61.10	61.1
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g	0	#DIV/0!	0
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g	0	#DIV/0!	0
PCB's		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Parameter A									0	#DIV/0!	0
Parameter B									0	#DIV/0!	0
Parameter C									0	#DIV/0!	0
Parameter D									0	#DIV/0!	0
Parameter E									0	#DIV/0!	0
Parameter F									0	#DIV/0!	0

Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_

Notes: Organic Nitrogen unusually high in 3rd quarter testing



# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. 1202-S-03 Facility Clean Delaware Sampling Frequency Requirements Met ( Y/N ) Y  
 Material Analyzed Dogfishhead brewery waste Approved Methods (Y/N) Y Priority Pollutant This Year (Y/N) N  
 Metals Required ( Y/N ) N Results in Dry Weight ( Y/N ) N Monitoring Year 2015 Last Priority Pollutant Test N/A

	1st Period		2nd Period		3rd Period		4th Period	
<b>PARAMETERS</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>
Moisture content %	99.8	%		%	99.9	%	99.8	%
Total Nitrogen as N %	422	ppm		ppm	121	ppm	111	ppm
Organic Nitrogen %	325	ppm		ppm	6.3	ppm	9.4	ppm
Ammonium as N %	0.23	ppm		ppm	115	ppm	99	ppm
Nitrate Nitrogen as N %	41	ppm		ppm		ppm	2.48	ppm
Solids %	0.165	%		%	0.1	%	0.2	%
Phosphorus %	51.5	ppm		ppm	25.2	ppm	26.1	ppm
Potassium %	71.4	ppm		ppm	68.2	ppm	72.3	ppm
Volatile Solids %		%		%		%		%
pH	7.35	S.U.		S.U.	7.53	S.U.	7.79	S.U.
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)
Chromium		(ppm)		(ppm)		(ppm)		(ppm)
Copper		(ppm)		(ppm)		(ppm)		(ppm)
Lead		(ppm)		(ppm)		(ppm)		(ppm)
Mercury		(ppm)		(ppm)		(ppm)		(ppm)
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)
Nickel		(ppm)		(ppm)		(ppm)		(ppm)
Selenium		(ppm)		(ppm)		(ppm)		(ppm)
Zinc		(ppm)		(ppm)		(ppm)		(ppm)
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
PCB's		(ppm)		(ppm)		(ppm)		(ppm)
Parameter A		ppm						
Parameter B								
Parameter C								
Parameter D								
Parameter E								
Parameter F								

Sample Date 2/10/2021 Sample Date \_\_\_\_\_ Sample Date 6/3/2021 Sample Date 7/8/2021

# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. 1202-S-03 Facility Clean Delaware Monitoring Year 2015

Material Analyzed Dogfishhead brewery waste

	5th Period		6th Period		7th Period		8th Period	
<b>PARAMETERS</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>
Moisture content %	99.8	%		%		%		%
Total Nitrogen as N %	141	ppm		ppm		ppm		ppm
Organic Nitrogen %	23.9	ppm		ppm		ppm		ppm
Ammonium as N %	117	ppm		ppm		ppm		ppm
Nitrate Nitrogen as N %	0	ppm		ppm		ppm		ppm
Solids %	0.163	%		%		%		%
Phosphorus %	28.4	ppm		ppm		ppm		ppm
Potassium %	69.5	ppm		ppm		ppm		ppm
Volatile Solids %		%		%		%		%
pH	7.77	S.U.		S.U.		S.U.		S.U.
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)
Chromium		(ppm)		(ppm)		(ppm)		(ppm)
Copper		(ppm)		(ppm)		(ppm)		(ppm)
Lead		(ppm)		(ppm)		(ppm)		(ppm)
Mercury		(ppm)		(ppm)		(ppm)		(ppm)
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)
Nickel		(ppm)		(ppm)		(ppm)		(ppm)
Selenium		(ppm)		(ppm)		(ppm)		(ppm)
Zinc		(ppm)		(ppm)		(ppm)		(ppm)
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
PCB's		(ppm)		(ppm)		(ppm)		(ppm)
Parameter A								
Parameter B								
Parameter C								
Parameter D								
Parameter E								
Parameter F								
Sample Date	<u>8/6/2021</u>		Sample Date		Sample Date		Sample Date	

# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. 1202-S-03 Facility Clean Delaware Monitoring Year 2015

Material Analyzed Dogfishhead brewery waste

PARAMETERS	9th Period		10th Period		11th Period		12th Period		# Events	Cumulative Total	
	Results	Units	Results	Units	Results	Units	Results	Units	XXXXXXX	Average	Maximum
Moisture content %		%		%		%		%	4	99.83	99.9
Total Nitrogen as N %		ppm		ppm		ppm		ppm	4	198.75	422
Organic Nitrogen %		ppm		ppm		ppm		ppm	4	91.15	325
Ammonium as N %		ppm		ppm		ppm		ppm	4	82.81	117
Nitrate Nitrogen as N %		ppm		ppm		ppm		ppm	3	14.49	41
Solids %		%		%		%		%	4	0.16	0.2
Phosphorus %		ppm		ppm		ppm		ppm	4	32.80	51.5
Potassium %		ppm		ppm		ppm		ppm	4	70.35	72.3
Volatile Solids %		%		%		%		%	0	#DIV/0!	0
pH		S.U.		S.U.		S.U.		S.U.	4	7.61	7.79
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Chromium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Copper		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Lead		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Mercury		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Nickel		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Selenium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Zinc		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g	0	#DIV/0!	0
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g	0	#DIV/0!	0
PCB's		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Parameter A									0	#DIV/0!	0
Parameter B									0	#DIV/0!	0
Parameter C									0	#DIV/0!	0
Parameter D									0	#DIV/0!	0
Parameter E									0	#DIV/0!	0
Parameter F									0	#DIV/0!	0

Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_

Notes: 4th and 5th period sampling converted from dry to wet



# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S- Facility Clean Delaware, LLC Sampling Frequency Requirements Met ( Y/N ) Y

Material Analyzed Grease (Restaurant) Approved Methods (Y/N) Y Priority Pollutant This Year (Y/N) N

Metals Required ( Y/N ) N Results in Dry Weight ( Y/N ) Y Monitoring Year 2021 Last Priority Pollutant Test N/A

	1st Period		2nd Period		3rd Period		4th Period	
<b>PARAMETERS</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>
Moisture content %	98.5	%	99.6	%	99.5	%	96.5	%
Total Nitrogen as N %	4.48	%	0.767	%	1.12	%	0.938	%
Organic Nitrogen %	4.46	%	0.767	%	1.1	%	0.76	%
Ammonium as N %	0.02	%	0	%	0.01	%	0.18	%
Nitrate Nitrogen as N %	0	%	0	%	0	%	0	%
Solids %	1.45	%	0.429	%	0.498	%	3.5	%
Phosphorus %	0.292	%	0.135	%	0.277	%	0.16	%
Potassium %	0.114	%	0.181	%		%	0.304	%
Volatile Solids %		%		%		%		%
pH	5.03	S.U.	4.38	S.U.	4.99	S.U.	4.42	S.U.
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)
Chromium		(ppm)		(ppm)		(ppm)		(ppm)
Copper		(ppm)		(ppm)		(ppm)		(ppm)
Lead		(ppm)		(ppm)		(ppm)		(ppm)
Mercury		(ppm)		(ppm)		(ppm)		(ppm)
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)
Nickel		(ppm)		(ppm)		(ppm)		(ppm)
Selenium		(ppm)		(ppm)		(ppm)		(ppm)
Zinc		(ppm)		(ppm)		(ppm)		(ppm)
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
PCB's		(ppm)		(ppm)		(ppm)		(ppm)
Cyanide		ppm						
Iron								ppm
Parameter C								
Parameter D								
Parameter E								
Parameter F								
Sample Date	<u>1/18/2021</u>		Sample Date	<u>3/18/2021</u>		Sample Date	<u>5/24/2021</u>	
						Sample Date	<u>7/28/2021</u>	

# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S-I Facility Clean Delaware, LLC Monitoring Year 2021

Material Analyzed Grease (Restaurant)

	5th Period		6th Period		7th Period		8th Period	
<b>PARAMETERS</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>
Moisture content %	99	%		%		%		%
Total Nitrogen as N %	2.23	%		%		%		%
Organic Nitrogen %	2.02	%		%		%		%
Ammonium as N %	0.21	%		%		%		%
Nitrate Nitrogen as N %		%		%		%		%
Solids %	1.05	%		%		%		%
Phosphorus %	0.164	%		%		%		%
Potassium %	0.182	%		%		%		%
Volatile Solids %	0.917	%		%		%		%
pH	5.4	S.U.		S.U.		S.U.		S.U.
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)
Chromium		(ppm)		(ppm)		(ppm)		(ppm)
Copper		(ppm)		(ppm)		(ppm)		(ppm)
Lead		(ppm)		(ppm)		(ppm)		(ppm)
Mercury		(ppm)		(ppm)		(ppm)		(ppm)
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)
Nickel		(ppm)		(ppm)		(ppm)		(ppm)
Selenium		(ppm)		(ppm)		(ppm)		(ppm)
Zinc		(ppm)		(ppm)		(ppm)		(ppm)
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
PCB's		(ppm)		(ppm)		(ppm)		(ppm)
Parameter A								
Parameter B								
Parameter C								
Parameter D								
Parameter E								
Parameter F								
Sample Date	<u>9/29/2021</u>		Sample Date		Sample Date		Sample Date	

# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S- Facility Clean Delaware, LLC Monitoring Year 2021

Material Analyzed Grease (Restaurant)

PARAMETERS	9th Period		10th Period		11th Period		12th Period		# Events	Cumulative Total	
	Results	Units	Results	Units	Results	Units	Results	Units	XXXXXXX	Average	Maximum
Moisture content %		%		%		%		%	5	98.62	99.6
Total Nitrogen as N %		%		%		%		%	5	1.91	4.48
Organic Nitrogen %		%		%		%		%	5	1.82	4.46
Ammonium as N %		%		%		%		%	5	0.08	0.21
Nitrate Nitrogen as N %		%		%		%		%	4	0.00	0
Solids %		%		%		%		%	5	1.39	3.5
Phosphorus %		%		%		%		%	5	0.21	0.292
Potassium %		%		%		%		%	4	0.20	0.304
Volatile Solids %		%		%		%		%	1	0.92	0.917
pH		S.U.		S.U.		S.U.		S.U.	5	4.84	5.4
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Chromium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Copper		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Lead		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Mercury		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Nickel		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Selenium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Zinc		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g	0	#DIV/0!	0
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g	0	#DIV/0!	0
PCB's		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Parameter A									0	#DIV/0!	0
Iron									0	#VALUE!	0
Parameter C									0	#DIV/0!	0
Parameter D									0	#DIV/0!	0
Parameter E									0	#DIV/0!	0
Parameter F									0	#DIV/0!	0

Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_

Notes:



# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S- Facility Clean Delaware, LLC Sampling Frequency Requirements Met ( Y/N ) Y

Material Analyzed Selbyville Approved Methods (Y/N) Y Priority Pollutant This Year (Y/N) N

Metals Required ( Y/N ) Y Results in Dry Weight ( Y/N ) Y Monitoring Year 2021 Last Priority Pollutant Test 2020

	1st Period		2nd Period		3rd Period		4th Period	
<b>PARAMETERS</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>
Moisture content %	97.32	%	97.03	%	97.15	%		%
Total Nitrogen as N %	5.62	%	7.51	%	9.82	%		%
Organic Nitrogen %	5.58	%	7.49	%	9.77	%		%
Ammonium as N %	0.04	%	0	%	0.003	%		%
Nitrate Nitrogen as N %	0	%	0.0218	%	0.0464	%		%
Solids %	2.68	%	2.97	%	2.85	%		%
Phosphorus %	1.9	%	2.13	%	2.88	%		%
Potassium %		%		%	0.482	%		%
Volatile Solids %		%		%		%		%
pH	7.39	S.U.	7.61	S.U.	7.23	S.U.		S.U.
Arsenic		(ppm)		(ppm)	7.29	(ppm)		(ppm)
Cadmium		(ppm)		(ppm)	0.919	(ppm)		(ppm)
Chromium		(ppm)		(ppm)	29.9	(ppm)		(ppm)
Copper		(ppm)		(ppm)	191	(ppm)		(ppm)
Lead		(ppm)		(ppm)	19.9	(ppm)		(ppm)
Mercury		(ppm)		(ppm)	0.026	(ppm)		(ppm)
Molybdenum		(ppm)		(ppm)	6.42	(ppm)		(ppm)
Nickel		(ppm)		(ppm)	23.2	(ppm)		(ppm)
Selenium		(ppm)		(ppm)	5.42	(ppm)		(ppm)
Zinc		(ppm)		(ppm)	1030	(ppm)		(ppm)
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g	26600	Mpn-Cfu/g	83700	Mpn-Cfu/g
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
PCB's		(ppm)		(ppm)		(ppm)		(ppm)
Cyanide		ppm		ppm				
Sodium		ppm						
Calcium		ppm						
Magnesium		ppm						
Parameter E								
Parameter F								
Sample Date	1/4/2021		Sample Date	1/7/2021		Sample Date	1/11/2021	

# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S-I Facility Clean Delaware, LLC Monitoring Year 2021

Material Analyzed Selbyville

## PARAMETERS

Moisture content %  
 Total Nitrogen as N %  
 Organic Nitrogen %  
 Ammonium as N %  
 Nitrate Nitrogen as N %  
 Solids %  
 Phosphorus %  
 Potassium %  
 Volatile Solids %  
 pH  
 Arsenic  
 Cadmium  
 Chromium  
 Copper  
 Lead  
 Mercury  
 Molybdenum  
 Nickel  
 Selenium  
 Zinc  
 Fecal Coliform  
 Salmonella  
 PCB's  
 Parameter A  
 Parameter B  
 Parameter C  
 Parameter D  
 Parameter E  
 Parameter F

5th Period		6th Period		7th Period		8th Period	
Results	Units	Results	Units	Results	Units	Results	Units
	%		%		%		%
	%		%		%		%
	%		%		%		%
	%		%		%		%
	%		%		%		%
	%		%		%		%
	%		%		%		%
	%		%		%		%
	S.U.		S.U.		S.U.		S.U.
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
120000	Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g
	Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
	(ppm)		(ppm)		(ppm)		(ppm)

Sample Date 1/11/2021 Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_

# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S-I Facility Clean Delaware, LLC Monitoring Year 2021

Material Analyzed Selbyville

PARAMETERS	9th Period		10th Period		11th Period		12th Period		# Events	Cumulative Total	
	Results	Units	Results	Units	Results	Units	Results	Units	XXXXXXX	Average	Maximum
Moisture content %		%		%		%		%	3	97.17	97.32
Total Nitrogen as N %		%		%		%		%	3	7.65	9.82
Organic Nitrogen %		%		%		%		%	3	7.61	9.77
Ammonium as N %		%		%		%		%	3	0.01	0.04
Nitrate Nitrogen as N %		%		%		%		%	3	0.02	0.0464
Solids %		%		%		%		%	3	2.83	2.97
Phosphorus %		%		%		%		%	3	2.30	2.88
Potassium %		%		%		%		%	1	0.48	0.482
Volatile Solids %		%		%		%		%	0	#DIV/0!	0
pH		S.U.		S.U.		S.U.		S.U.	3	7.41	7.61
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)	1	7.29	7.29
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)	1	0.92	0.919
Chromium		(ppm)		(ppm)		(ppm)		(ppm)	1	29.90	29.9
Copper		(ppm)		(ppm)		(ppm)		(ppm)	1	191.00	191
Lead		(ppm)		(ppm)		(ppm)		(ppm)	1	19.90	19.9
Mercury		(ppm)		(ppm)		(ppm)		(ppm)	1	0.03	0.026
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)	1	6.42	6.42
Nickel		(ppm)		(ppm)		(ppm)		(ppm)	1	23.20	23.2
Selenium		(ppm)		(ppm)		(ppm)		(ppm)	1	5.42	5.42
Zinc		(ppm)		(ppm)		(ppm)		(ppm)	1	1030.00	1030
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g	3	76766.67	120000
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g	0	#DIV/0!	0
PCB's		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Parameter A									0	#DIV/0!	0
Parameter B									0	#DIV/0!	0
Parameter C									0	#DIV/0!	0
Parameter D									0	#DIV/0!	0
Parameter E									0	#DIV/0!	0
Parameter F									0	#DIV/0!	0

Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_

Notes:



# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S- Facility Clean Delaware, LLC Sampling Frequency Requirements Met ( Y/N ) Y  
 Material Analyzed Lewes Approved Methods (Y/N) Y Priority Pollutant This Year (Y/N) N  
 Metals Required ( Y/N ) Y Results in Dry Weight ( Y/N ) Y Monitoring Year 2021 Last Priority Pollutant Test 2016

	1st Period		2nd Period		3rd Period		4th Period	
<b>PARAMETERS</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>
Moisture content %		%		%		%		%
Total Nitrogen as N %		%		%		%		%
Organic Nitrogen %		%		%		%		%
Ammonium as N %		%		%		%		%
Nitrate Nitrogen as N %		%		%		%		%
Solids %		%		%		%		%
Phosphorus %		%		%		%		%
Potassium %		%		%		%		%
Volatile Solids %		%		%		%		%
pH		S.U.		S.U.		S.U.		S.U.
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)
Chromium		(ppm)		(ppm)		(ppm)		(ppm)
Copper		(ppm)		(ppm)		(ppm)		(ppm)
Lead		(ppm)		(ppm)		(ppm)		(ppm)
Mercury		(ppm)		(ppm)		(ppm)		(ppm)
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)
Nickel		(ppm)		(ppm)		(ppm)		(ppm)
Selenium		(ppm)		(ppm)		(ppm)		(ppm)
Zinc		(ppm)		(ppm)		(ppm)		(ppm)
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
PCB's		(ppm)		(ppm)		(ppm)		(ppm)
Cyanide		ppm		ppm				
Sodium		ppm						
Calcium		ppm						
Magnesium		ppm						
Parameter E								
Parameter F								
Sample Date			Sample Date			Sample Date		

# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S-I Facility Clean Delaware, LLC Monitoring Year 2021

Material Analyzed Lewes

	5th Period		6th Period		7th Period		8th Period	
<b>PARAMETERS</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>
Moisture content %		%		%		%		%
Total Nitrogen as N %		%		%		%		%
Organic Nitrogen %		%		%		%		%
Ammonium as N %		%		%		%		%
Nitrate Nitrogen as N %		%		%		%		%
Solids %		%		%		%		%
Phosphorus %		%		%		%		%
Potassium %		%		%		%		%
Volatile Solids %		%		%		%		%
pH		S.U.		S.U.		S.U.		S.U.
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)
Chromium		(ppm)		(ppm)		(ppm)		(ppm)
Copper		(ppm)		(ppm)		(ppm)		(ppm)
Lead		(ppm)		(ppm)		(ppm)		(ppm)
Mercury		(ppm)		(ppm)		(ppm)		(ppm)
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)
Nickel		(ppm)		(ppm)		(ppm)		(ppm)
Selenium		(ppm)		(ppm)		(ppm)		(ppm)
Zinc		(ppm)		(ppm)		(ppm)		(ppm)
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
PCB's		(ppm)		(ppm)		(ppm)		(ppm)
Parameter A								
Parameter B								
Parameter C								
Parameter D								
Parameter E								
Parameter F								
Sample Date			Sample Date			Sample Date		

# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S-I Facility Clean Delaware, LLC Monitoring Year 2021

Material Analyzed Lewes

PARAMETERS	9th Period		10th Period		11th Period		12th Period		# Events	Cumulative Total	
	Results	Units	Results	Units	Results	Units	Results	Units	XXXXXXX	Average	Maximum
Moisture content %		%		%		%		%	0	#DIV/0!	0
Total Nitrogen as N %		%		%		%		%	0	#DIV/0!	0
Organic Nitrogen %		%		%		%		%	0	#DIV/0!	0
Ammonium as N %		%		%		%		%	0	#DIV/0!	0
Nitrate Nitrogen as N %		%		%		%		%	0	#DIV/0!	0
Solids %		%		%		%		%	0	#DIV/0!	0
Phosphorus %		%		%		%		%	0	#DIV/0!	0
Potassium %		%		%		%		%	0	#DIV/0!	0
Volatile Solids %		%		%		%		%	0	#DIV/0!	0
pH		S.U.		S.U.		S.U.		S.U.	0	#DIV/0!	0
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Chromium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Copper		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Lead		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Mercury		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Nickel		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Selenium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Zinc		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g	0	#DIV/0!	0
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g	0	#DIV/0!	0
PCB's		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Parameter A									0	#DIV/0!	0
Parameter B									0	#DIV/0!	0
Parameter C									0	#DIV/0!	0
Parameter D									0	#DIV/0!	0
Parameter E									0	#DIV/0!	0
Parameter F									0	#DIV/0!	0

Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_

Notes: Geometric mean of FC 1,421,428 MPN



# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S- Facility Clean Delaware, LLC Sampling Frequency Requirements Met ( Y/N ) Y

Material Analyzed Iron Water - South Bethany Approved Methods (Y/N) Y Priority Pollutant This Year (Y/N) n/a

Metals Required ( Y/N ) N Results in Dry Weight ( Y/N ) N Monitoring Year 2017 Last Priority Pollutant Test n/a

	1st Period		2nd Period		3rd Period		4th Period	
<b>PARAMETERS</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>	<b>Results</b>	<b>Units</b>
Moisture content %		%		%		%		%
Total Nitrogen as N %		%		%		%		%
Organic Nitrogen %		%		%		%		%
Ammonium as N %		%		%		%		%
Nitrate Nitrogen as N %		%		%		%		%
Solids %		%		%		%		%
Phosphorus %		%		%		%		%
Potassium %		%		%		%		%
Volatile Solids %		%		%		%		%
pH		S.U.		S.U.		S.U.		S.U.
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)
Chromium		(ppm)		(ppm)		(ppm)		(ppm)
Copper		(ppm)		(ppm)		(ppm)		(ppm)
Lead		(ppm)		(ppm)		(ppm)		(ppm)
Mercury		(ppm)		(ppm)		(ppm)		(ppm)
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)
Nickel		(ppm)		(ppm)		(ppm)		(ppm)
Selenium		(ppm)		(ppm)		(ppm)		(ppm)
Zinc		(ppm)		(ppm)		(ppm)		(ppm)
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
PCB's		(ppm)		(ppm)		(ppm)		(ppm)
Iron		ppm		ppm				
Parameter B								
Parameter C								
Parameter D								
Parameter E								
Parameter F								
Sample Date			Sample Date			Sample Date		

# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S-I Facility Clean Delaware, LLC Monitoring Year 2017

Material Analyzed Iron Water - South Bethany

## PARAMETERS

Moisture content %  
 Total Nitrogen as N %  
 Organic Nitrogen %  
 Ammonium as N %  
 Nitrate Nitrogen as N %  
 Solids %  
 Phosphorus %  
 Potassium %  
 Volatile Solids %  
 pH  
 Arsenic  
 Cadmium  
 Chromium  
 Copper  
 Lead  
 Mercury  
 Molybdenum  
 Nickel  
 Selenium  
 Zinc  
 Fecal Coliform  
 Salmonella  
 PCB's  
 Parameter A  
 Parameter B  
 Parameter C  
 Parameter D  
 Parameter E  
 Parameter F

5th Period		6th Period		7th Period		8th Period	
Results	Units	Results	Units	Results	Units	Results	Units
	%		%		%		%
	%		%		%		%
	%		%		%		%
	%		%		%		%
	%		%		%		%
	%		%		%		%
	%		%		%		%
	%		%		%		%
	S.U.		S.U.		S.U.		S.U.
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	(ppm)		(ppm)		(ppm)		(ppm)
	Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g
	Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g
	(ppm)		(ppm)		(ppm)		(ppm)
Sample Date		Sample Date		Sample Date		Sample Date	

# Monitoring Data Sheet - Land Application (One Sheet per Material Applied)

Permit No. AGU 1702 S- Facility Clean Delaware, LLC Monitoring Year 2017

Material Analyzed Iron Water - South Bethany

PARAMETERS	9th Period		10th Period		11th Period		12th Period		# Events	Cumulative Total	
	Results	Units	Results	Units	Results	Units	Results	Units	XXXXXXX	Average	Maximum
Moisture content %		%		%		%		%	0	#DIV/0!	0
Total Nitrogen as N %		%		%		%		%	0	#DIV/0!	0
Organic Nitrogen %		%		%		%		%	0	#DIV/0!	0
Ammonium as N %		%		%		%		%	0	#DIV/0!	0
Nitrate Nitrogen as N %		%		%		%		%	0	#DIV/0!	0
Solids %		%		%		%		%	0	#DIV/0!	0
Phosphorus %		%		%		%		%	0	#DIV/0!	0
Potassium %		%		%		%		%	0	#DIV/0!	0
Volatile Solids %		%		%		%		%	0	#DIV/0!	0
pH		S.U.		S.U.		S.U.		S.U.	0	#DIV/0!	0
Arsenic		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Cadmium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Chromium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Copper		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Lead		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Mercury		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Molybdenum		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Nickel		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Selenium		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Zinc		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Fecal Coliform		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g		Mpn-Cfu/g	0	#DIV/0!	0
Salmonella		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g		Mpn-Cfu/4g	0	#DIV/0!	0
PCB's		(ppm)		(ppm)		(ppm)		(ppm)	0	#DIV/0!	0
Parameter A									0	#DIV/0!	0
Parameter B									0	#DIV/0!	0
Parameter C									0	#DIV/0!	0
Parameter D									0	#DIV/0!	0
Parameter E									0	#DIV/0!	0
Parameter F									0	#DIV/0!	0

Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_ Sample Date \_\_\_\_\_

Notes:

# Field Summary Sheet - Land Application (1 Per Field)

Facility Clean Delaware, LLC

Permit No. AGU 1702 S-03

Application Year 2021

Field Harbeson

Total Acres 32

Applied Acres 24

APPLIED								PPM (no data entry)			Pounds
Material	Gallons	lbs/gal	Cal Wet lbs	Wet lbs	% Solids	Dry Lbs	Dry Tons	Org N	Ammonia*	N02+N03	Org N
1		8.34	0			0	0.00	0	0	0	0
2		8.34	0			0	0.0	0	0	0	0
3		8.34	0			0	0.0	0	0	0	0
4		8.34	0			0	0.0	0	0	0	0
5		8.34	0			0	0.0	0	0	0	0
6		8.34	0			0	0.0	0	0	0	0
7		8.34	0			0	0.0	0	0	0	0
8		8.34	0			0	0.0	0	0	0	0
9		8.34	0			0	0.0	0	0	0	0
10		8.34	0			0	0.0	0	0	0	0

	Gallons	Wet lbs	Dry Lbs	Dry Tons	Total Org N
Yearly Field Totals	0	0	0	0	0

Percent ***								Pounds			
Material	Org N	Ammonia*	N02+N03	PAN/Org N	P	K	Min Factor**	PAN Org N	P	K	Tot. PAN**
1 0				0				0	0	0	0
2 0				0				0	0	0	0
3 0				0				0	0	0	0
4 0				0				0	0	0	0
5 0				0				0	0	0	0
6 0				0				0	0	0	0
7 0				0				0	0	0	0
8 0				0				0	0	0	0
9 0				0				0	0	0	0
10 0				0				0	0	0	0

	PAN Org N	P	K	Tot. PAN**
Yearly Field Totals	0	0	0	0



# Metals Sheet (1 Per Field)

Field Harbeson

Acres Applied 24

PPM											
Material	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc	
1	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
2	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
3											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
4	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
5	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
6	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
7	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
8	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
9	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
10	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Yearly Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Previous Totals	0.86	0.19	2.79	16.83	1.31	0.01	0.56	5.42	0.59	41.32	pounds/ac
Cumulative Totals	0.86	0.19	2.79	16.83	1.31	0.01	0.56	5.42	0.59	41.32	pounds/ac
Cumulative Totals	0.98	0.22	3.18	19.19	1.49	0.01	0.64	6.18	0.67	47.10	kg/ha

Field Harbeson

Acres Applied 24

### Mineralized Nitrogen\*\*\*

					0
Total lbs organic N applied this yr. (Organic N X Mineralization factor**) for this year					
	Org. N Mineralized				Mineralized N.
	In 2021	Times (x)	Kmin**	Equals (=)	Towards 2021
From 2020	1,185		0.15		178
From 2019	0		0.08		0
From 2018	1,098		0.04		44
Total mineralized nitrogen (previous 3 years )					222

### Additional Nutrients Applied (Nutrients from Fertilizer)

Total pounds of nitrogen from other sources	5760
Total pounds of phosphorus from other sources	0
Total pounds of potassium from other sources	0

### Organic N. Mineralization from 2021 Credited Towards Future Years

Amount of Organic Nitrogen Left to Mineralize for 2022	0
Amount of Organic Nitrogen Left to Mineralize for 2023	0
Amount of Organic Nitrogen Left to Mineralize for 2024	0

\*\* Kmin =

#### Mineralization factors

	Time /Yrs	Unstabilized	Aerobic	Anaerobic	Compost	Other Enter Info
This Year	0-1	0.4	0.30	0.20	0.10	
Last Year	1-2	0.2	0.15	0.10	0.05	
2 Years Ago	2-3	0.1	0.08	0.05	0.03	
3 Years Ago	3-4	0.05	0.04	0.03	0.03	

Note: Other mineralization factors may be used with DNREC approval

\*\*\*\* PPM / 10,000 is equal to percent

P205 X 0.44 is equal to P

Percent X 10,000 is equal to PPM

### TOTAL NUTRIENTS APPLIED TO FIELD THIS YEAR

Lbs PAN per Acre	249
Lbs P per Acre	0
Lbs K per Acre	0
Dry tons material ac.	0.0

### Notes

Version 10/23/14

## Crop Report Sheet (1 Per Field)

Facility Clean Delaware, LLC

Total Acres 32

Application Acres 24

Field Harbeson

Application Year 2021

### Crop:

	Crop #1	Crop #2	Crop #3
Crop(s) Grown	corn		
3 highest of past 5 yields	In bushels/tons per acre		
1st			
2nd			
3rd			
Estimated Yield / AC	0.0	0.0	0.0
or UD Extension rec. yield			
Actual Yield / AC	240.0		
Month Crop Planted?	April		
Month Crop Harvested?	September		

### Next Reporting Year:

Planned Crop(s) corn

Proposed maximum PAN application rate (next year) 260 lb/ac

### Uptake\*:

Lbs per Bushel

	N	P	K
Corn	1	0.18	0.25
Soybean	3.8	0.44	1.25
Wheat	1.3	0.22	0.29
Barley	1	0.18	0.25
Oats	0.7	0.13	0.2
Rye	1	0.22	0.2

Insert Crop Uptake Information - Uptake in lbs per bushel or lbs per ton

Millet	8.78	1.00	10.7
--------	------	------	------

Portion of crop(s) harvested 100%

Crop(s) for human consumption? (Y/N) N

Periods of Land Application? No application

### Nitrogen

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	1		
Estimated Uptake/Ac	240	0	0
Total Estimated Uptake/AC	240		
Tot LBS PAN/AC applied	240		
Amount Over(+)/Under(-)	9		

Crop uptake/Acre 2020	54		
Pounds PAN app./Acre 2020	72		
Amount Over (+)/Under (-)	18		

Crop uptake/Acre 2019	0		
Pounds PAN app./Acre 2019	163		
Amount Over (+)/Under (-)	163		

\* A more complete crop library may be obtained from your county extension office.

### Phosphorus

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.18		
Estimated Uptake/Ac	43	0	0
Total Estimated Uptake/AC	43		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	-43		

Crop uptake/Acre 2020	9		
Pounds PAN app./Acre 2020	43		
Amount Over (+)/Under (-)	34		

Crop uptake/Acre 2019	0		
Pounds PAN app./Acre 2019	0		
Amount Over (+)/Under (-)	0		

### Potassium

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.25		
Estimated Uptake/Ac	60	0	0
Total Estimated Uptake/AC	60		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	-60		

Crop uptake/Acre 2020	20		
Pounds PAN app./Acre 2020	50		
Amount Over (+)/Under (-)	36		

Crop uptake/Acre 2019	0		
Pounds PAN app./Acre 2019	0		
Amount Over (+)/Under (-)	0		

### Notes:

Harvested corn with rye cover crop

# Field Summary Sheet - Land Application (1 Per Field)

Facility Clean Delaware, LLC

Permit No. AGU 1702 S-03

Application Year 2021

Field New Market

Total Acres 34

Applied Acres 34

APPLIED								PPM (no data entry)			Pounds
Material	Gallons	lbs/gal	Cal Wet lbs	Wet lbs	% Solids	Dry Lbs	Dry Tons	Org N	Ammonia*	N02+N03	Org N
1 no application		8.34	0			0	0.00	0	0	0	0
2		8.34	0			0	0.0	0	0	0	0
3		8.34	0			0	0.0	0	0	0	0
4		8.34	0			0	0.0	0	0	0	0
5		8.34	0			0	0.0	0	0	0	0
6		8.34	0			0	0.0	0	0	0	0
7		8.34	0			0	0.0	0	0	0	0
8		8.34	0			0	0.0	0	0	0	0
9		8.34	0			0	0.0	0	0	0	0
10		8.34	0			0	0.0	0	0	0	0

	Gallons	Wet lbs	Dry Lbs	Dry Tons	Total Org N
Yearly Field Totals	0	0	0	0	0

Percent ***								Pounds			
Material	Org N	Ammonia*	N02+N03	PAN/Org N	P	K	Min Factor**	PAN Org N	P	K	Tot. PAN**
1 no application				0				0	0	0	0
2 0				0				0	0	0	0
3 0				0				0	0	0	0
4 0				0				0	0	0	0
5 0				0				0	0	0	0
6 0				0				0	0	0	0
7 0				0				0	0	0	0
8 0				0				0	0	0	0
9 0				0				0	0	0	0
10 0				0				0	0	0	0

	PAN Org N	P	K	Tot. PAN**
Yearly Field Totals	0	0	0	0



# Metals Sheet (1 Per Field)

Field New Market

Acres Applied 34

PPM											
Material	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc	
1 no application											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
2 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
3 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
4 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
5 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
6 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
7 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
8 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
9 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
10 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Yearly Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Previous Totals	0.18	0.09	0.84	19.23	0.92	5.42	0.38	1.37	0.25	37.19	pounds/ac
Cumulative Totals	0.18	0.09	0.84	19.23	0.92	5.42	0.38	1.37	0.25	37.19	pounds/ac
Cumulative Totals	0.21	0.10	0.96	21.92	1.05	6.18	0.38	1.56	0.29	42.40	kg/ha

Field New Market

Acres Applied 34

### Mineralized Nitrogen\*\*\*

					0
Total lbs organic N applied this yr. (Organic N X Mineralization factor**) for this year					
	Org. N Mineralized				Mineralized N.
	In 2021	Times (x)	Kmin**	Equals (=)	Towards 2021
From 2020	0		0.15		0
From 2019	0		0.08		0
From 2018	0		0.04		0
Total mineralized nitrogen (previous 3 years )					0

### Additional Nutrients Applied (Nutrients from Fertilizer)

Total pounds of nitrogen from other sources	0
Total pounds of phosphorus from other sources	0
Total pounds of potassium from other sources	0

### Organic N. Mineralization from 2021 Credited Towards Future Years

Amount of Organic Nitrogen Left to Mineralize for 2022	0
Amount of Organic Nitrogen Left to Mineralize for 2023	0
Amount of Organic Nitrogen Left to Mineralize for 2024	0

### TOTAL NUTRIENTS APPLIED TO FIELD THIS YEAR

Lbs PAN per Acre	0
Lbs P per Acre	0
Lbs K per Acre	0
Dry tons material ac.	0.0

### Notes

no land application

\*\* Kmin =

#### Mineralization factors

	Time /Yrs	Unstabilized	Aerobic	Anaerobic	Compost	Other Enter Info
This Year	0-1	0.4	0.30	0.20	0.10	
Last Year	1-2	0.2	0.15	0.10	0.05	
2 Years Ago	2-3	0.1	0.08	0.05	0.03	
3 Years Ago	3-4	0.05	0.04	0.03	0.03	

Note: Other mineralization factors may be used with DNREC aproval

\*\*\*\* PPM / 10,000 is equal to percent

P205 X 0.44 is equal to P

Percent X 10,000 is equal to PPM

Version 10/23/14

## Crop Report Sheet (1 Per Field)

Facility Clean Delaware, LLC

Total Acres 34

Application Acres 24.5

Field New Market

Application Year 2021

### Crop:

	Crop #1	Crop #2	Crop #3
Crop(s) Grown	Soybean		
3 highest of past 5 yields	In bushels/tons per acre		
1st			
2nd			
3rd			
Estimated Yield / AC	0.0	0.0	0.0
or UD Extension rec. yield			
Actual Yield / AC			
Month Crop Planted?			
Month Crop Harvested?			

### Next Reporting Year:

Planned Crop(s) Corn

Proposed maximum PAN application rate (next year) 100 lb/ac

### Uptake\*:

Lbs per Bushel

	N	P	K
Corn	1	0.18	0.25
Soybean	3.8	0.44	1.25
Wheat	1.3	0.22	0.29
Barley	1	0.18	0.25
Oats	0.7	0.13	0.2
Rye	1	0.22	0.2

Insert Crop Uptake Information - Uptake in lbs per bushel or lbs per ton


Portion of crop(s) harvested 100%

Crop(s) for human consumption? (Y/N) N

Periods of Land Application? No land application

### Nitrogen

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	1	3.8	
Estimated Uptake/Ac	0	0	0
Total Estimated Uptake/AC	0		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	0		

Crop uptake/Acre 2020	102
Pounds PAN app./Acre 2020	160
Amount Over (+)/Under (-)	58

Crop uptake/Acre 2019	228
Pounds PAN app./Acre 2019	60
Amount Over (+)/Under (-)	-168

### Phosphorus

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.13	0.44	
Estimated Uptake/Ac	0	0	0
Total Estimated Uptake/AC	0		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	0		

Crop uptake/Acre 2020	13
Pounds PAN app./Acre 2020	0
Amount Over (+)/Under (-)	-13

Crop uptake/Acre 2019	26
Pounds PAN app./Acre 2019	0
Amount Over (+)/Under (-)	-26

### Potassium

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.2	1.25	
Estimated Uptake/Ac	0	0	0
Total Estimated Uptake/AC	0		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	0		

Crop uptake/Acre 2020	20
Pounds PAN app./Acre 2020	0
Amount Over (+)/Under (-)	-20

Crop uptake/Acre 2019	75
Pounds PAN app./Acre 2019	0
Amount Over (+)/Under (-)	-75

\* A more complete crop library may be obtained from your county extension office.

### Notes:

Field currently in Soybeans

# Field Summary Sheet - Land Application (1 Per Field)

Facility Clean Delaware, LLC

Permit No. AGU 1702 S-03

Application Year 2021

Field Milton 7

Total Acres 32

Applied Acres 25

APPLIED								PPM (no data entry)			Pounds
Material	Gallons	lbs/gal	Cal Wet lbs	Wet lbs	% Solids	Dry Lbs	Dry Tons	Org N	Ammonia*	N02+N03	Org N
1 no application		8.34	0			0	0.00	0	0	0	0
2		8.34	0			0	0.0	0	0	0	0
3		8.34	0			0	0.0	0	0	0	0
4		8.34	0			0	0.0	0	0	0	0
5		8.34	0			0	0.0	0	0	0	0
6		8.34	0			0	0.0	0	0	0	0
7		8.34	0			0	0.0	0	0	0	0
8		8.34	0			0	0.0	0	0	0	0
9		8.34	0			0	0.0	0	0	0	0
10		8.34	0			0	0.0	0	0	0	0

	Gallons	Wet lbs	Dry Lbs	Dry Tons	Total Org N
Yearly Field Totals	0	0	0	0	0

Percent ***								Pounds			
Material	Org N	Ammonia*	N02+N03	PAN/Org N	P	K	Min Factor**	PAN Org N	P	K	Tot. PAN**
1 no application				0				0	0	0	0
2 0				0				0	0	0	0
3 0				0				0	0	0	0
4 0				0				0	0	0	0
5 0				0				0	0	0	0
6 0				0				0	0	0	0
7 0				0				0	0	0	0
8 0				0				0	0	0	0
9 0				0				0	0	0	0
10 0				0				0	0	0	0

	PAN Org N	P	K	Tot. PAN**
Yearly Field Totals	0	0	0	0



# Metals Sheet (1 Per Field)

Field Milton 7

Acres Applied 25

PPM											
Material	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc	
1 no application											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
2 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
3 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
4 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
5 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
6 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
7 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
8 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
9 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
10 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Yearly Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Previous Totals	0.23	0.17	1.33	32.05	1.49	0.03	0.72	1.60	0.46	57.07	pounds/ac
Cumulative Totals	0.23	0.17	1.33	32.05	1.49	0.03	0.72	1.60	0.46	57.07	pounds/ac
Cumulative Totals	0.26	0.19	1.52	36.54	1.70	0.03	0.82	1.82	0.52	65.06	kg/ha

Field Milton 7

Acres Applied 25

### Mineralized Nitrogen\*\*\*

					0
Total lbs organic N applied this yr. (Organic N X Mineralization factor**) for this year					
	Org. N Mineralized				Mineralized N.
	In 2021	Times (x)	Kmin**	Equals (=)	Towards 2021
From 2020	0		0.15		0
From 2019	0		0.08		0
From 2018	0		0.04		0
Total mineralized nitrogen (previous 3 years )					0

### Additional Nutrients Applied (Nutrients from Fertilizer)

Total pounds of nitrogen from other sources	
Total pounds of phosphorus from other sources	
Total pounds of potassium from other sources	

### Organic N. Mineralization from 2021 Credited Towards Future Years

Amount of Organic Nitrogen Left to Mineralize for 2022	0
Amount of Organic Nitrogen Left to Mineralize for 2023	0
Amount of Organic Nitrogen Left to Mineralize for 2024	0

### TOTAL NUTRIENTS APPLIED TO FIELD THIS YEAR

Lbs PAN per Acre	0
Lbs P per Acre	0
Lbs K per Acre	0
Dry tons material ac.	0.0

### Notes

no land application

\*\* Kmin =

#### Mineralization factors

	Time /Yrs	Unstabilized	Aerobic	Anaerobic	Compost	Other Enter Info
This Year	0-1	0.4	0.30	0.20	0.10	
Last Year	1-2	0.2	0.15	0.10	0.05	
2 Years Ago	2-3	0.1	0.08	0.05	0.03	
3 Years Ago	3-4	0.05	0.04	0.03	0.03	

Note: Other mineralization factors may be used with DNREC aproval

\*\*\*\* PPM / 10,000 is equal to percent

P205 X 0.44 is equal to P

Percent X 10,000 is equal to PPM

Version 10/23/14

## Crop Report Sheet (1 Per Field)

Facility Clean Delaware, LLC

Total Acres 32

Application Acres 25

Field Milton 7

Application Year 2021

### Crop:

	Crop #1	Crop #2	Crop #3
Crop(s) Grown	Soybean		
3 highest of past 5 yields	In bushels/tons per acre		
1st			
2nd			
3rd			
Estimated Yield / AC	0.0	0.0	0.0
or UD Extension rec. yield			
Actual Yield / AC			
Month Crop Planted?			
Month Crop Harvested?			

### Next Reporting Year:

Planned Crop(s) Corn

Proposed maximum PAN application rate (next year) 160 lb/ac

### Uptake\*:

Lbs per Bushel

	N	P	K
Corn	1	0.18	0.25
Soybean	3.8	0.44	1.25
Wheat	1.3	0.22	0.29
Barley	1	0.18	0.25
Oats	0.7	0.13	0.2
Rye	1	0.22	0.2

Insert Crop Uptake Information - Uptake in lbs per bushel or lbs per ton


Portion of crop(s) harvested 100%

Crop(s) for human consumption? (Y/N) N

Periods of Land Application? No application

### Nitrogen

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	1	0	
Estimated Uptake/Ac	0	0	0
Total Estimated Uptake/AC	0		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	0		

Crop uptake/Acre 2020	161
Pounds PAN app./Acre 2020	160
Amount Over (+)/Under (-)	-1

Crop uptake/Acre 2019	159
Pounds PAN app./Acre 2019	150
Amount Over (+)/Under (-)	-9

\* A more complete crop library may be obtained from your county extension office.

### Phosphorus

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.18	0	
Estimated Uptake/Ac	0	0	0
Total Estimated Uptake/AC	0		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	0		

Crop uptake/Acre 2020	29
Pounds PAN app./Acre 2020	0
Amount Over (+)/Under (-)	-29

Crop uptake/Acre 2019	29
Pounds PAN app./Acre 2019	0
Amount Over (+)/Under (-)	-29

### Potassium

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.25	0	
Estimated Uptake/Ac	0	0	0
Total Estimated Uptake/AC	0		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	0		

Crop uptake/Acre 2020	40
Pounds PAN app./Acre 2020	0
Amount Over (+)/Under (-)	-40

Crop uptake/Acre 2019	40
Pounds PAN app./Acre 2019	0
Amount Over (+)/Under (-)	-40

### Notes:

Field currently in Soybeans

# Field Summary Sheet - Land Application (1 Per Field)

Facility Clean Delaware, LLC

Permit No. AGU 1702 S-03

Application Year 2021

Field Milton 6

Total Acres 34

Applied Acres 28

APPLIED								PPM (no data entry)			Pounds
Material	Gallons	lbs/gal	Cal Wet lbs	Wet lbs	% Solids	Dry Lbs	Dry Tons	Org N	Ammonia*	N02+N03	Org N
1 no application		8.34	0			0	0.00	0	0	0	0
2		8.34	0			0	0.0	0	0	0	0
3		8.34	0			0	0.0	0	0	0	0
4		8.34	0			0	0.0	0	0	0	0
5		8.34	0			0	0.0	0	0	0	0
6		8.34	0			0	0.0	0	0	0	0
7		8.34	0			0	0.0	0	0	0	0
8		8.34	0			0	0.0	0	0	0	0
9		8.34	0			0	0.0	0	0	0	0
10		8.34	0			0	0.0	0	0	0	0

	Gallons	Wet lbs	Dry Lbs	Dry Tons	Total Org N
Yearly Field Totals	0	0	0	0	0

Percent ***								Pounds			
Material	Org N	Ammonia*	N02+N03	PAN/Org N	P	K	Min Factor**	PAN Org N	P	K	Tot. PAN**
1 no application				0				0	0	0	0
2 0				0				0	0	0	0
3 0				0				0	0	0	0
4 0				0				0	0	0	0
5 0				0				0	0	0	0
6 0				0				0	0	0	0
7 0				0				0	0	0	0
8 0				0				0	0	0	0
9 0				0				0	0	0	0
10 0				0				0	0	0	0

	PAN Org N	P	K	Tot. PAN**
Yearly Field Totals	0	0	0	0



# Metals Sheet (1 Per Field)

Field Milton 6

Acres Applied 28

PPM											
Material	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc	
1 no application											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
2 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
3 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
4 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
5 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
6 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
7 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
8 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
9 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
10 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Yearly Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Previous Totals	0.22	0.11	2.3	19.96	1.2	0.08	0.47	5.91	0.34	51.74	pounds/ac
Cumulative Totals	0.22	0.11	2.30	19.96	1.20	0.08	0.47	5.91	0.34	51.74	pounds/ac
Cumulative Totals	0.25	0.13	2.62	22.75	1.37	0.09	0.54	6.74	0.39	58.98	kg/ha

Field Milton 6

Acres Applied 28

### Mineralized Nitrogen\*\*\*

					0
Total lbs organic N applied this yr. (Organic N X Mineralization factor**) for this year					
	Org. N Mineralized				Mineralized N.
	In 2021	Times (x)	Kmin**	Equals (=)	Towards 2021
From 2020	0		0.15		0
From 2019	0		0.08		0
From 2018	0		0.04		0
Total mineralized nitrogen (previous 3 years )					0

### Additional Nutrients Applied (Nutrients from Fertilizer)

Total pounds of nitrogen from other sources	6720
Total pounds of phosphorus from other sources	0
Total pounds of potassium from other sources	0

### Organic N. Mineralization from 2021 Credited Towards Future Years

Amount of Organic Nitrogen Left to Mineralize for 2022	0
Amount of Organic Nitrogen Left to Mineralize for 2023	0
Amount of Organic Nitrogen Left to Mineralize for 2024	0

### TOTAL NUTRIENTS APPLIED TO FIELD THIS YEAR

Lbs PAN per Acre	240
Lbs P per Acre	0
Lbs K per Acre	0
Dry tons material ac.	0.0

### Notes

no land application

\*\* Kmin =

#### Mineralization factors

	Time /Yrs	Unstabilized	Aerobic	Anaerobic	Compost	Other Enter Info
This Year	0-1	0.4	0.30	0.20	0.10	
Last Year	1-2	0.2	0.15	0.10	0.05	
2 Years Ago	2-3	0.1	0.08	0.05	0.03	
3 Years Ago	3-4	0.05	0.04	0.03	0.03	

Note: Other mineralization factors may be used with DNREC approval

\*\*\*\* PPM / 10,000 is equal to percent  
Percent X 10,000 is equal to PPM

P205 X 0.44 is equal to P

Version 10/23/14

## Crop Report Sheet (1 Per Field)

Facility Clean Delaware, LLC

Total Acres 32

Application Acres 22.5

Field Milton 1

Application Year 2021

### Crop:

	Crop #1	Crop #2	Crop #3
Crop(s) Grown	Alfalfa tim	Alfalfa tim	
3 highest of past 5 yields	In bushels/tons per acre		
1st			
2nd			
3rd			
Estimated Yield / AC	0.0	0.0	0.0
or UD Extension rec. yield			
Actual Yield / AC	3.2	2.0	
Month Crop Planted?			
Month Crop Harvested?			

### Next Reporting Year:

Planned Crop(s) Alfalfa tim Alfalfa tim  
 Proposed maximum PAN application rate (next year) 280 lb/ac

### Uptake\*:

Lbs per Bushel

	N	P	K
Corn	1	0.18	0.25
Soybean	3.8	0.44	1.25
Wheat	1.3	0.22	0.29
Barley	1	0.18	0.25
Oats	0.7	0.13	0.2
Rye	1	0.22	0.2

Insert Crop Uptake Information - Uptake in lbs per bushel or lbs per ton

Alfalfa 1st cut	32.33	2.52	0
Alfalfa 2nd cut	50.96	3.82	0

Portion of crop(s) harvested 100%

Crop(s) for human consumption? (Y/N) N

Periods of Land Application? year round application

### Nitrogen

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	32.33	50.96	
Estimated Uptake/Ac	103	101	0
Total Estimated Uptake/AC	204		
Tot LBS PAN/AC applied	71		
Amount Over(+)/Under(-)	-133		

Crop uptake/Acre 2020	223
Pounds PAN app./Acre 2020	139
Amount Over (+)/Under (-)	-84

Crop uptake/Acre 2019	203
Pounds PAN app./Acre 2019	162
Amount Over (+)/Under (-)	-41

\* A more complete crop library may be obtained from your county extension office.

### Phosphorus

	Crop #1	Crop #2	Crop #3
	2.52	3.82	
	8	8	0
	16		
	4		
	-12		

	17
	15
	-2

	33
	38
	5

### Potassium

	Crop #1	Crop #2	Crop #3
	0	0	
	0	0	0
	0		
	19		
	19		

	0
	44
	44

	106
	22
	-84

### Notes:

Spray application field  
 1st hay cutting 135 bales @ 1060lbs/ bale 3.18 ton/acre  
 2nd hay cutting 83 bales @ 1040 lbs/bale 1.99 tons/acre

## Crop Report Sheet (1 Per Field)

Facility Clean Delaware, LLC

Total Acres 34

Application Acres 28

Field Milton 6

Application Year 2021

### Crop:

	Crop #1	Crop #2	Crop #3
Crop(s) Grown	corn		
3 highest of past 5 yields	In bushels/tons per acre		
1st	259		
2nd	155		
3rd	123		
Estimated Yield / AC	179.0	0.0	0.0
or UD Extension rec. yield			
Actual Yield / AC	249.0		
Month Crop Planted?			
Month Crop Harvested?			

### Next Reporting Year:

Planned Crop(s) Corn

Proposed maximum PAN application rate (next year) 240 lb/ac

### Uptake\*:

Lbs per Bushel

	N	P	K
Corn	1	0.18	0.25
Soybean	3.8	0.44	1.25
Wheat	1.3	0.22	0.29
Barley	1	0.18	0.25
Oats	0.7	0.13	0.2
Rye	1	0.22	0.2

Insert Crop Uptake Information - Uptake in lbs per bushel or lbs per ton


Portion of crop(s) harvested n/a

Crop(s) for human consumption? (Y/N) N

Periods of Land Application? No application

### Nitrogen

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	1		
Estimated Uptake/Ac	249	0	0
Total Estimated Uptake/AC	249		
Tot LBS PAN/AC applied	240		
Amount Over(+)/Under(-)	-9		

Crop uptake/Acre 2020	242
Pounds PAN app./Acre 2020	238
Amount Over (+)/Under (-)	-4

Crop uptake/Acre 2019	259
Pounds PAN app./Acre 2019	225
Amount Over (+)/Under (-)	-34

\* A more complete crop library may be obtained from your county extension office.

### Phosphorus

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.18		
Estimated Uptake/Ac	45	0	0
Total Estimated Uptake/AC	45		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	-45		

Crop uptake/Acre 2020	44
Pounds PAN app./Acre 2020	0
Amount Over (+)/Under (-)	-44

Crop uptake/Acre 2019	47
Pounds PAN app./Acre 2019	0
Amount Over (+)/Under (-)	-47

### Potassium

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.25		
Estimated Uptake/Ac	62	0	0
Total Estimated Uptake/AC	62		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	-62		

Crop uptake/Acre 2020	61
Pounds PAN app./Acre 2020	0
Amount Over (+)/Under (-)	-61

Crop uptake/Acre 2019	65
Pounds PAN app./Acre 2019	0
Amount Over (+)/Under (-)	-65

### Notes:

Harvested corn with rye cover crop



# Field Summary Sheet - Land Application (1 Per Field)

Facility Clean Delaware, LLC

Permit No. AGU 1702 S-03

Application Year 2021

Field Milton 5

Total Acres 20

Applied Acres 19.75

APPLIED								PPM (no data entry)			Pounds
Material	Gallons	lbs/gal	Cal Wet lbs	Wet lbs	% Solids	Dry Lbs	Dry Tons	Org N	Ammonia*	N02+N03	Org N
1		8.34	0			0	0.00	0	0	0	0
2		8.34	0			0	0.0	0	0	0	0
3		8.34	0			0	0.0	0	0	0	0
4		8.34	0			0	0.0	0	0	0	0
5		8.34	0			0	0.0	0	0	0	0
6		8.34	0			0	0.0	0	0	0	0
7		8.34	0			0	0.0	0	0	0	0
8		8.34	0			0	0.0	0	0	0	0
9		8.34	0			0	0.0	0	0	0	0
10		8.34	0			0	0.0	0	0	0	0

	Gallons	Wet lbs	Dry Lbs	Dry Tons	Total Org N
Yearly Field Totals	0	0	0	0	0

Percent ***								Pounds			
Material	Org N	Ammonia*	N02+N03	PAN/Org N	P	K	Min Factor**	PAN Org N	P	K	Tot. PAN**
1 0				0				0	0	0	0
2 0				0				0	0	0	0
3 0				0				0	0	0	0
4 0				0				0	0	0	0
5 0				0				0	0	0	0
6 0				0				0	0	0	0
7 0				0				0	0	0	0
8 0				0				0	0	0	0
9 0				0				0	0	0	0
10 0				0				0	0	0	0

	PAN Org N	P	K	Tot. PAN**
Yearly Field Totals	0	0	0	0

# Metals Sheet (1 Per Field)

Field Milton 5

Acres Applied 19.75

PPM											
Material	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc	
1	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
2	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
3	0										ppm
	18.8	1.66	2.71	154	8.25	0	6.77	15.1	0	1210	percent
	0.0019%	0.0002%	0.0003%	0.0154%	0.0008%	0.0000%	0.0007%	0.0015%	0.0000%	0.1210%	pounds/ac
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
5	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
6	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
7	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
8	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
9	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
10	0										ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Yearly Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Previous Totals	14.75	0.76	3.14	73.37	4.22	0.02	2.82	8.49	0.56	463.31	pounds/ac
Cumulative Totals	14.75	0.76	3.14	73.37	4.22	0.02	2.82	8.49	0.56	463.31	pounds/ac
Cumulative Totals	16.82	0.87	3.58	83.64	4.81	0.02	3.21	9.68	0.64	528.17	kg/ha

Field Milton 5

Acres Applied 19.75

### Mineralized Nitrogen\*\*\*

0

Total lbs organic N applied this yr. (Organic N X Mineralization factor\*\*) for this year

	Org. N Mineralized	Times (x)	Kmin**	Equals (=)	Mineralized N.
	In 2021				Towards 2021
From 2020	1,217		0.15		183
From 2019	437		0.08		35
From 2018	316		0.04		13
Total mineralized nitrogen (previous 3 years )					230

### Additional Nutrients Applied (Nutrients from Fertilizer)

Total pounds of nitrogen from other sources	4740
Total pounds of phosphorus from other sources	
Total pounds of potassium from other sources	

### Organic N. Mineralization from 2021 Credited Towards Future Years

Amount of Organic Nitrogen Left to Mineralize for 2022	0
Amount of Organic Nitrogen Left to Mineralize for 2023	0
Amount of Organic Nitrogen Left to Mineralize for 2024	0

### TOTAL NUTRIENTS APPLIED TO FIELD THIS YEAR

Lbs PAN per Acre	252
Lbs P per Acre	0
Lbs K per Acre	0
Dry tons material ac.	0.0

### Notes

ammonium recorded at 50%  
Fall/Winter land application

\*\* Kmin =

#### Mineralization factors

	Time /Yrs	Unstabilized	Aerobic	Anaerobic	Compost	Other Enter Info
This Year	0-1	0.4	0.30	0.20	0.10	
Last Year	1-2	0.2	0.15	0.10	0.05	
2 Years Ago	2-3	0.1	0.08	0.05	0.03	
3 Years Ago	3-4	0.05	0.04	0.03	0.03	

Note: Other mineralization factors may be used with DNREC approval

\*\*\*\* PPM / 10,000 is equal to percent

P205 X 0.44 is equal to P

Percent X 10,000 is equal to PPM

Version 10/23/14

## Crop Report Sheet (1 Per Field)

Facility Clean Delaware, LLC

Total Acres 20

Application Acres 19.75

Field Milton 5

Application Year 2021

### Crop:

	Crop #1	Crop #2	Crop #3
Crop(s) Grown	Corn		
3 highest of past 5 yields	In bushels/tons per acre		
1st			
2nd			
3rd			
Estimated Yield / AC	0.0	0.0	0.0
or UD Extension rec. yield			
Actual Yield / AC	249.0		
Month Crop Planted?			
Month Crop Harvested?			

### Next Reporting Year:

Planned Crop(s) corn

Proposed maximum PAN application rate (next year) 240 lb/ac

### Uptake\*:

Lbs per Bushel

	N	P	K
Corn	1	0.18	0.25
Soybean	3.8	0.44	1.25
Wheat	1.3	0.22	0.29
Barley	1	0.18	0.25
Oats	0.7	0.13	0.2
Rye	1	0.22	0.2

Insert Crop Uptake Information - Uptake in lbs per bushel or lbs per ton


Portion of crop(s) harvested 100%

Crop(s) for human consumption? (Y/N) N

Periods of Land Application? No application

### Nitrogen

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	1		
Estimated Uptake/Ac	249	0	0
Total Estimated Uptake/AC	249		
Tot LBS PAN/AC applied	252		
Amount Over(+)/Under(-)	3		

Crop uptake/Acre 2020	242
Pounds PAN app./Acre 2020	260
Amount Over (+)/Under (-)	18

Crop uptake/Acre 2019	259
Pounds PAN app./Acre 2019	261
Amount Over (+)/Under (-)	2

\* A more complete crop library may be obtained from your county extension office.

### Phosphorus

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.18		
Estimated Uptake/Ac	45	0	0
Total Estimated Uptake/AC	45		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	-45		

Crop uptake/Acre 2020	44
Pounds PAN app./Acre 2020	47
Amount Over (+)/Under (-)	3

Crop uptake/Acre 2019	47
Pounds PAN app./Acre 2019	12
Amount Over (+)/Under (-)	-35

### Potassium

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.25		
Estimated Uptake/Ac	62	0	0
Total Estimated Uptake/AC	62		
Tot LBS PAN/AC applied	0		
Amount Over(+)/Under(-)	-62		

Crop uptake/Acre 2020	61
Pounds PAN app./Acre 2020	44
Amount Over (+)/Under (-)	-17

Crop uptake/Acre 2019	65
Pounds PAN app./Acre 2019	20
Amount Over (+)/Under (-)	-45

### Notes:

Harvested corn with rye cover crop



# Field Summary Sheet - Land Application (1 Per Field)

Facility Clean Delaware, LLC

Permit No. AGU 1702 S-03

Application Year 2021

Field Milton 4

Total Acres 28

Applied Acres 21.75

APPLIED								PPM (no data entry)			Pounds
Material	Gallons	lbs/gal	Cal Wet lbs	Wet lbs	% Solids	Dry Lbs	Dry Tons	Org N	Ammonia*	N02+N03	Org N
1 CDI Spray	2,518,800	8.34	21,006,792	21,006,792	0.26	54,618	27.31	31,100	12,350	400	1,699
2		8.34	0			0	0.0	0	0	0	0
3		8.34	0			0	0.0	0	0	0	0
4		8.34	0			0	0.0	0	0	0	0
5		8.34	0			0	0.0	0	0	0	0
6		8.34	0			0	0.0	0	0	0	0
7		8.34	0			0	0.0	0	0	0	0
8		8.34	0			0	0.0	0	0	0	0
9		8.34	0			0	0.0	0	0	0	0
10		8.34	0			0	0.0	0	0	0	0

	Gallons	Wet lbs	Dry Lbs	Dry Tons	Total Org N
Yearly Field Totals	2,518,800	21,006,792	54,618	27	1,699

Percent ***								Pounds			
Material	Org N	Ammonia*	N02+N03	PAN/Org N	P	K	Min Factor**	PAN Org N	P	K	Tot. PAN**
1 CDI Spray	3.11	1.235	0.04	1.244	0.19	1.02	0.4	679	104	557	1,376
2 0				0				0	0	0	0
3 0				0				0	0	0	0
4 0				0				0	0	0	0
5 0				0				0	0	0	0
6 0				0				0	0	0	0
7				0				0	0	0	0
8				0				0	0	0	0
9				0				0	0	0	0
10				0				0	0	0	0

	PAN Org N	P	K	Tot. PAN**
Yearly Field Totals	679	104	557	1,376

# Metals Sheet (1 Per Field)

Field Milton 4

Acres Applied 21.75

PPM											
Material	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc	
1											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
2											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
3											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
4											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
5											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
6											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
7											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
8											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
9											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
10											ppm
0	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Yearly Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Previous Totals	4.83	2.16	51.34	211.70	18.84	1.76	18.41	38.76	0.34	570.50	pounds/ac
Cumulative Totals	4.83	2.16	51.34	211.70	18.84	1.76	18.41	38.76	0.34	570.50	pounds/ac
Cumulative Totals	5.51	2.46	58.53	241.34	21.48	2.01	20.99	44.19	0.39	650.37	kg/ha

Field Milton 4

Acres Applied 21.75

### Mineralized Nitrogen\*\*\*

					679
Total lbs organic N applied this yr. (Organic N X Mineralization factor**) for this year					
	Org. N Mineralized				Mineralized N.
	In 2021	Times (x)	Kmin**	Equals (=)	Towards 2021
From 2020	950		0.2		190
From 2019	0		0.1		0
From 2018	0		0.05		0
Total mineralized nitrogen (previous 3 years )					190

### Additional Nutrients Applied (Nutrients from Fertilizer)

Total pounds of nitrogen from other sources	
Total pounds of phosphorus from other sources	0
Total pounds of potassium from other sources	0

### Organic N. Mineralization from 2021 Credited Towards Future Years

Amount of Organic Nitrogen Left to Mineralize for 2022	1,019
Amount of Organic Nitrogen Left to Mineralize for 2023	815
Amount of Organic Nitrogen Left to Mineralize for 2024	734

### TOTAL NUTRIENTS APPLIED TO FIELD THIS YEAR

Lbs PAN per Acre	72
Lbs P per Acre	5
Lbs K per Acre	26
Dry tons material ac.	1.3

### Notes

No application in 2019

\*\* Kmin =

### Mineralization factors

	Time /Yrs	Unstabilized	Aerobic	Anaerobic	Compost	Other Enter Info
This Year	0-1	0.4	0.30	0.20	0.10	
Last Year	1-2	0.2	0.15	0.10	0.05	
2 Years Ago	2-3	0.1	0.08	0.05	0.03	
3 Years Ago	3-4	0.05	0.04	0.03	0.03	

Note: Other mineralization factors may be used with DNREC approval

\*\*\*\* PPM / 10,000 is equal to percent

P205 X 0.44 is equal to P

Percent X 10,000 is equal to PPM

Version 10/23/14

## Crop Report Sheet (1 Per Field)

Facility Clean Delaware, LLC

Total Acres 28

Application Acres 21.75

Field Milton 4

Application Year 2021

### Crop:

	Crop #1	Crop #2	Crop #3
Crop(s) Grown	Alfalfa tim	Alfalfa tim	Alfalfa tim
3 highest of past 5 yields	In bushels/tons per acre		
1st			
2nd			
3rd			
Estimated Yield / AC	0.0	0.0	0.0
or UD Extension rec. yield			
Actual Yield / AC	1.8	1.5	
Month Crop Planted?			
Month Crop Harvested?			

### Next Reporting Year:

Planned Crop(s) Alfalfa tim

Proposed maximum PAN application rate (next year) 280 lb/ac

### Uptake\*:

Lbs per Bushel

	N	P	K
Corn	1	0.18	0.25
Soybean	3.8	0.44	1.25
Wheat	1.3	0.22	0.29
Barley	1	0.18	0.25
Oats	0.7	0.13	0.2
Rye	1	0.22	0.2

Insert Crop Uptake Information - Uptake in lbs per bushel or lbs per ton

Alfalfa 1st cut	32.33	2.52	0
Alfalfa 2nd cut	50.96	3.82	0

Portion of crop(s) harvested 100%

Crop(s) for human consumption? (Y/N) N

Periods of Land Application? year round application

### Nitrogen

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	32.33	50.96	50.96
Estimated Uptake/Ac	58	75	0
Total Estimated Uptake/AC	133		
Tot LBS PAN/AC applied	67		
Amount Over(+)/Under(-)	-66		

Crop uptake/Acre 2020	216
Pounds PAN app./Acre 2020	136
Amount Over (+)/Under (-)	-110

Crop uptake/Acre 2019	275
Pounds PAN app./Acre 2019	228
Amount Over (+)/Under (-)	-47

\* A more complete crop library may be obtained from your county extension office.

### Phosphorus

	Crop #1	Crop #2	Crop #3
	2.52	3.82	3.82
	4	6	0
	10		
	4		
	-6		

	16
	0
	-16

	45
	0
	-45

### Potassium

	Crop #1	Crop #2	Crop #3
	0	0	0
	0	0	0
	0		
	24		
	24		

	0
	45
	45

	134
	0
	-134

### Notes:

Spray application field  
 1st hay cutting 79 bales @ 980lbs/ bale 1.78 ton/acre  
 2nd hay cutting 61 bales @ 1060 lbs/bale 1.48 tons/acre



# Field Summary Sheet - Land Application (1 Per Field)

Facility Clean Delaware, LLC

Permit No. AGU 1702 S-03

Application Year 2021

Field Milton 3

Total Acres 30

Applied Acres 26

	APPLIED								PPM (no data entry)			Pounds
	Material	Gallons	lbs/gal	Cal Wet lbs	Wet lbs	% Solids	Dry Lbs	Dry Tons	Org N	Ammonia*	N02+N03	Org N
1	Dogfish	511,180	8.34	4,263,241	4,263,241	100	4,263,241	2,131.62	91	41	15	389
2	Grease	186,660	8.34	1,556,744	1,556,744	1.91	29,734	14.9	18,200	800	0	541
3	Selbyville	594,519	8.34	4,958,288	4,958,288	2.83	140,320	70.2	76,100	100	200	10,678
4			8.34	0			0	0.0	0	0	0	0
5			8.34	0			0	0.0	0	0	0	0
6			8.34	0			0	0.0	0	0	0	0
7			8.34	0			0	0.0	0	0	0	0
8			8.34	0			0	0.0	0	0	0	0
9			8.34	0			0	0.0	0	0	0	0
10			8.34	0			0	0.0	0	0	0	0

	Gallons	Wet lbs	Dry Lbs	Dry Tons	Total Org N
Yearly Field Totals	1,292,359	10,778,273	4,433,294	2,217	11,608

Percent ***								Pounds			
Material	Org N	Ammonia*	N02+N03	PAN/Org N	P	K	Min Factor**	PAN Org N	P	K	Tot. PAN**
1 Dogfish	0.009119	0.00414	0.00145	0.0036476	0.00328	0.00703	0.4	156	140	300	394
2 Grease	1.82	0.08	0	0.728	0.21	0.2	0.4	216	62	59	240
3 Selbyville	7.61	0.01	0.02	2.283	2.3	0.48	0.3	3,203	3,227	674	3,246
4 0				0				0	0	0	0
5 0				0				0	0	0	0
6 0				0				0	0	0	0
7 0				0				0	0	0	0
8 0				0				0	0	0	0
9 0								0	0	0	0
10 0				0				0	0	0	0

	PAN Org N	P	K	Tot. PAN**
Yearly Field Totals	3,575	3,430	1,033	3,880

# Metals Sheet (1 Per Field)

Field Milton 3

Acres Applied 26

PPM											
Material	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc	
1 Dogfish											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
2 Grease											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
3 Selbyville	7.29	0.92	29.9	191	19.9	0.3	6.42	23.2	5.42	1030	ppm
	0.0007%	0.0001%	0.0030%	0.0191%	0.0020%	0.0000%	0.0006%	0.0023%	0.0005%	13.0200%	percent
	1.20	0.15	4.90	31.32	3.26	0.05	1.05	3.80	0.89	21,349.00	pounds/ac
4 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
5 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
6 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
7 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
8 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
9 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
10 0											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Yearly Totals	1.20	0.15	4.90	31.32	3.26	0.05	1.05	3.80	0.89	21,349.00	pounds/ac
Previous Totals	13.02	3.21	72.01	826.2	47.91	2.34	29.91	57.25	15.39	1847.26	pounds/ac
Cumulative Totals	14.22	2.82	76.91	857.52	42.03	2.39	30.96	61.05	16.28	23,196.26	pounds/ac
Cumulative Totals	16.21	3.21	87.68	977.57	47.91	2.72	35.30	69.60	18.56	26,443.74	kg/ha

Field Milton 3

Acres Applied 26

### Mineralized Nitrogen\*\*\*

					3,575
Total lbs organic N applied this yr. (Organic N X Mineralization factor**) for this year					
	Org. N Mineralized				Mineralized N.
	In 2021	Times (x)	Kmin**	Equals (=)	Towards 2021
From 2020	0		0.15		0
From 2019	1,114		0.08		89
From 2018	270		0.04		11
Total mineralized nitrogen (previous 3 years )					100

### Additional Nutrients Applied (Nutrients from Fertilizer)

Total pounds of nitrogen from other sources	2600
Total pounds of phosphorus from other sources	0
Total pounds of potassium from other sources	0

### Organic N. Mineralization from 2021 Credited Towards Future Years

Amount of Organic Nitrogen Left to Mineralize for 2022	8,033
Amount of Organic Nitrogen Left to Mineralize for 2023	6,828
Amount of Organic Nitrogen Left to Mineralize for 2024	6,282

### TOTAL NUTRIENTS APPLIED TO FIELD THIS YEAR

Lbs PAN per Acre	253
Lbs P per Acre	132
Lbs K per Acre	40
Dry tons material ac.	85.3

### Notes

ammonium recorded at 50%  
Summer land application

\*\* Kmin =

### Mineralization factors

	Time /Yrs	Unstabilized	Aerobic	Anaerobic	Compost	Other Enter Info
This Year	0-1	0.4	0.30	0.20	0.10	
Last Year	1-2	0.2	0.15	0.10	0.05	
2 Years Ago	2-3	0.1	0.08	0.05	0.03	
3 Years Ago	3-4	0.05	0.04	0.03	0.03	

Note: Other mineralization factors may be used with DNREC approval

\*\*\*\* PPM / 10,000 is equal to percent

P205 X 0.44 is equal to P

Percent X 10,000 is equal to PPM

Version 10/23/14

## Crop Report Sheet (1 Per Field)

Facility Clean Delaware, LLC

Total Acres 30

Application Acres 26

Field Milton 3

Application Year 2021

### Crop:

	Crop #1	Crop #2	Crop #3
Crop(s) Grown	Rye		
3 highest of past 5 yields	In bushels/tons per acre		
1st			
2nd			
3rd			
Estimated Yield / AC	0.0	0.0	0.0
or UD Extension rec. yield			
Actual Yield / AC	249.0		
Month Crop Planted?			
Month Crop Harvested?			

### Next Reporting Year:

Planned Crop(s) corn

Proposed maximum PAN application rate (next year) 240 lb/ac

### Uptake\*:

Lbs per Bushel

	N	P	K
Corn	1	0.18	0.25
Soybean	3.8	0.44	1.25
Wheat	1.3	0.22	0.29
Barley	1	0.18	0.25
Oats	0.7	0.13	0.2
Rye	1	0.22	0.2

Insert Crop Uptake Information - Uptake in lbs per bushel or lbs per ton


Portion of crop(s) harvested 100%

Crop(s) for human consumption? (Y/N) N

Periods of Land Application? Jan-March Oct-Dec

### Nitrogen

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	1		
Estimated Uptake/Ac	249	0	0
Total Estimated Uptake/AC	249		
Tot LBS PAN/AC applied	253		
Amount Over(+)/Under(-)	4		

Crop uptake/Acre 2020	60
Pounds PAN app./Acre 2020	63
Amount Over (+)/Under (-)	3

Crop uptake/Acre 2019	60
Pounds PAN app./Acre 2019	63
Amount Over (+)/Under (-)	3

\* A more complete crop library may be obtained from your county extension office.

### Phosphorus

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.22		
Estimated Uptake/Ac	55	0	0
Total Estimated Uptake/AC	55		
Tot LBS PAN/AC applied	133		
Amount Over(+)/Under(-)	77		

Crop uptake/Acre 2020	44
Pounds PAN app./Acre 2020	0
Amount Over (+)/Under (-)	-44

Crop uptake/Acre 2019	12
Pounds PAN app./Acre 2019	24
Amount Over (+)/Under (-)	12

### Potassium

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	0.2		
Estimated Uptake/Ac	50	0	0
Total Estimated Uptake/AC	50		
Tot LBS PAN/AC applied	40		
Amount Over(+)/Under(-)	-10		

Crop uptake/Acre 2020	61
Pounds PAN app./Acre 2020	0
Amount Over (+)/Under (-)	-61

Crop uptake/Acre 2019	22
Pounds PAN app./Acre 2019	29
Amount Over (+)/Under (-)	7

### Notes:

Harvested corn with rye cover crop  
Fall 2021 and winter 2022 application field



# Field Summary Sheet - Land Application (1 Per Field)

Facility Clean Delaware, LLC Permit No. AGU 1702 S-03 Application Year 2021

Field Milton 2 Total Acres 28 Applied Acres 27.5

APPLIED								PPM (no data entry)			Pounds
Material	Gallons	lbs/gal	Cal Wet lbs	Wet lbs	% Solids	Dry Lbs	Dry Tons	Org N	Ammonia*	N02+N03	Org N
1 Dogfish	706,500	8.34	5,892,210	5,892,210	100	5,892,210	2,946.11	91	41	15	537
2 Grease	334,900	8.34	2,793,066	2,793,066	1.91	53,348	26.7	18,200	400	0	971
3 CDI Sludge	86,000	8.34	717,240	717,240	5.1	36,579	18.3	700	200	0	26
4 Selbyville	57,048	8.34	475,780	475,780	2.83	13,465	6.7	76,100	100	200	1,025
5		8.34	0			0	0.0	0	0	0	0
6		8.34	0			0	0.0	0	0	0	0
7		8.34	0			0	0.0	0	0	0	0
8		8.34	0			0	0.0	0	0	0	0
9		8.34	0			0	0.0	0	0	0	0
10		8.34	0			0	0.0	0	0	0	0

	Gallons	Wet lbs	Dry Lbs	Dry Tons	Total Org N
Yearly Field Totals	1,184,448	9,878,296	5,995,601	2,998	2,558

Percent ***								Pounds			
Material	Org N	Ammonia*	N02+N03	PAN/Org N	P	K	Min Factor**	PAN Org N	P	K	Tot. PAN**
1 Dogfish	0.009119	0.00414	0.00145	0.0036476	0.00328	0.00703	0.4	215	193	414	544
2 Grease	1.82	0.04	0	0.728	0.21	0.2	0.4	388	112	107	410
3 CDI Sludge	0.07	0.02	0	0.021	0.04	0.01	0.3	8	15	4	15
4 Selbyville	7.61	0.01	0.02	2.283	2.3	0.48	0.3	307	310	65	311
5 0				0				0	0	0	0
6 0				0				0	0	0	0
7 0				0				0	0	0	0
8 0				0				0	0	0	0
9 0				0				0	0	0	0
10 0				0				0	0	0	0

	PAN Org N	P	K	Tot. PAN**
Yearly Field Totals	918	630	589	1,280

# Metals Sheet (1 Per Field)

Field Milton 2

Acres Applied 27.5

PPM											
Material	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc	
1 Dogfish											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
2 Grease											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
3 CDI Sludge	0.09	0.04	0.36	9.61	0.41	0	0.04	0.3	0.09	37.9	ppm
	0.0000%	0.0000%	0.0000%	0.0010%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0038%	percent
	0.02	0.01	0.08	2.06	0.09	0.00	0.01	0.06	0.02	8.12	pounds/ac
4 Selbyville	7.29	0.92	29.9	191	19.9	0.3	6.42	23.2	5.42	1030	ppm
	0.0007%	0.0001%	0.0030%	0.0191%	0.0020%	0.0000%	0.0006%	0.0023%	0.0005%	0.1030%	percent
	1.56	0.20	6.41	40.92	4.26	0.06	1.38	4.97	1.16	220.69	pounds/ac
5											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
6											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
7											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
8											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
9											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
10											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Yearly Totals	1.58	0.21	6.48	42.98	4.35	0.06	1.38	5.04	1.18	228.81	pounds/ac
Previous Totals	4.99	1.62	10.15	224.4	8.27	0.6	18.52	27.59	7.32	472.75	pounds/ac
Cumulative Totals	6.57	1.83	16.63	267.38	12.62	0.66	19.90	32.63	8.50	701.56	pounds/ac
Cumulative Totals	7.49	2.08	18.96	304.82	14.39	0.76	22.69	37.19	9.69	799.78	kg/ha

Field Milton 2

Acres Applied 27.5

### Mineralized Nitrogen\*\*\*

Total lbs organic N applied this yr. (Organic N X Mineralization factor\*\*) for this year

	Org. N Mineralized In 2021	Times (x)	Kmin**	Equals (=)	Mineralized N. Towards 2021
From 2020	4,124		0.15		619
From 2019	2,491		0.08		199
From 2018	2,330		0.04		93
Total mineralized nitrogen (previous 3 years )					911

### Additional Nutrients Applied (Nutrients from Fertilizer)

Total pounds of nitrogen from other sources	0
Total pounds of phosphorus from other sources	0
Total pounds of potassium from other sources	0

### Organic N. Mineralization from 2021 Credited Towards Future Years

Amount of Organic Nitrogen Left to Mineralize for 2022	1,640
Amount of Organic Nitrogen Left to Mineralize for 2023	1,394
Amount of Organic Nitrogen Left to Mineralize for 2024	1,283

### TOTAL NUTRIENTS APPLIED TO FIELD THIS YEAR

Lbs PAN per Acre	80
Lbs P per Acre	23
Lbs K per Acre	21
Dry tons material ac.	109.0

### Notes

Ammonia # presented at 50% of lab data to reflect volatilization for grease and dogfish

\*\* Kmin =

#### Mineralization factors

	Time /Yrs	Unstabilized	Aerobic	Anaerobic	Compost	Other Enter Info
This Year	0-1	0.4	0.30	0.20	0.10	
Last Year	1-2	0.2	0.15	0.10	0.05	
2 Years Ago	2-3	0.1	0.08	0.05	0.03	
3 Years Ago	3-4	0.05	0.04	0.03	0.03	

Note: Other mineralization factors may be used with DNREC approval

\*\*\*\* PPM / 10,000 is equal to percent  
Percent X 10,000 is equal to PPM

P205 X 0.44 is equal to P

Version 10/23/14

## Crop Report Sheet (1 Per Field)

Facility Clean Delaware, LLC

Total Acres 28

Application Acres 28

Field Milton 2

Application Year 2021

### Crop:

	Crop #1	Crop #2	Crop #3
Crop(s) Grown	Millet	Millet	
3 highest of past 5 yields	In bushels/tons per acre		
1st			
2nd			
3rd			
Estimated Yield / AC	0.0	0.0	0.0
or UD Extension rec. yield			
Actual Yield / AC	0.9	0.9	
Month Crop Planted?			
Month Crop Harvested?			

### Next Reporting Year:

Planned Crop(s)   
 Proposed maximum PAN application rate (next year) 240 lb/ac

### Uptake\*:

Lbs per Bushel

	N	P	K
Corn	1	0.18	0.25
Soybean	3.8	0.44	1.25
Wheat	1.3	0.22	0.29
Barley	1	0.18	0.25
Oats	0.7	0.13	0.2
Rye	1	0.22	0.2

Insert Crop Uptake Information - Uptake in lbs per bushel or lbs per ton

Millet	8.78	1.00	10.7
--------	------	------	------

Portion of crop(s) harvested 100%

Crop(s) for human consumption? (Y/N) N

Periods of Land Application? April - Sept

### Nitrogen

	Crop #1	Crop #2	Crop #3
Crop Uptake Factor	8.78	8.78	
Estimated Uptake/Ac	8	7	0
Total Estimated Uptake/AC	15		
Tot LBS PAN/AC applied	68		
Amount Over(+)/Under(-)	53		

Crop uptake/Acre 2020	242
Pounds PAN app./Acre 2020	229
Amount Over (+)/Under (-)	-13

Crop uptake/Acre 2019	339
Pounds PAN app./Acre 2019	260
Amount Over (+)/Under (-)	-79

\* A more complete crop library may be obtained from your county extension office.

### Phosphorus

Crop #1	Crop #2	Crop #3
1	1	0
1	1	0
2		
12		
10		

44
97
53

26
9
-17

### Potassium

Crop #1	Crop #2	Crop #3
10.7	10.7	0
10	9	0
18		
19		
1		

61
31
-30

0
294
294

### Notes:

Summer 2021 Land application field  
 1st millet cutting 48 bales @ 1040lbs/ bale .89 ton/acre  
 2nd millet cutting 38 bales @ 1230 lbs/bale .83 tons/acre



# Field Summary Sheet - Land Application (1 Per Field)

Facility Clean Delaware, LLC

Permit No. AGU 1702 S-03

Application Year 2021

Field Milton 1

Total Acres 32

Applied Acres 25

APPLIED								PPM (no data entry)			Pounds
Material	Gallons	lbs/gal	Cal Wet lbs	Wet lbs	% Solids	Dry Lbs	Dry Tons	Org N	Ammonia*	N02+N03	Org N
1 CDI Spray	2,402,750	8.34	20,038,935	20,038,935	0.26	52,101	26.05	31,100	12,350	400	1,620
2		8.34	0			0	0.0	0	0	0	0
3		8.34	0			0	0.0	0	0	0	0
4		8.34	0			0	0.0	0	0	0	0
5		8.34	0			0	0.0	0	0	0	0
6		8.34	0			0	0.0	0	0	0	0
7		8.34	0			0	0.0	0	0	0	0
8		8.34	0			0	0.0	0	0	0	0
9		8.34	0			0	0.0	0	0	0	0
10		8.34	0			0	0.0	0	0	0	0

	Gallons	Wet lbs	Dry Lbs	Dry Tons	Total Org N
Yearly Field Totals	2,402,750	20,038,935	52,101	26	1,620

Percent ***								Pounds			
Material	Org N	Ammonia*	N02+N03	PAN/Org N	P	K	Min Factor**	PAN Org N	P	K	Tot. PAN**
1 CDI Spray	3.11	1.235	0.04	1.244	0.19	1.02	0.4	648	99	531	1,312
2				0				0	0	0	0
3				0				0	0	0	0
4				0				0	0	0	0
5				0				0	0	0	0
6 0				0				0	0	0	0
7 0				0				0	0	0	0
8 0				0				0	0	0	0
9 0				0				0	0	0	0
10 0				0				0	0	0	0

	PAN Org N	P	K	Tot. PAN**
Yearly Field Totals	648	99	531	1,312

# Metals Sheet (1 Per Field)

Field Milton 1

Acres Applied 25

PPM											
Material	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc	
1 CDI Spray											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
2											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
3											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
4											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
5											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
6											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
7											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
8											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
9											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
10											ppm
	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	percent
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Yearly Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	pounds/ac
Previous Totals	4.61	0.63	11.42	105.30	4.25	0.34	2.48	19.16	5.12	381.91	pounds/ac
Cumulative Totals	4.61	0.63	11.42	105.30	4.25	0.34	2.48	19.16	5.12	381.91	pounds/ac
Cumulative Totals	5.26	0.72	13.02	120.04	4.85	0.39	2.83	21.84	5.84	435.38	kg/ha

Field Milton 1

Acres Applied 25

### Mineralized Nitrogen\*\*\*

Total lbs organic N applied this yr. (Organic N X Mineralization factor\*\*) for this year

	Org. N Mineralized In 2021	Times (x)	Kmin**	Equals (=)	Mineralized N. Towards 2021
From 2020	1,082		0.2		216
From 2019	3,147		0.1		315
From 2018	671		0.05		34
Total mineralized nitrogen (previous 3 years )					565

### Additional Nutrients Applied (Nutrients from Fertilizer)

Total pounds of nitrogen from other sources	0
Total pounds of phosphorus from other sources	0
Total pounds of potassium from other sources	0

### Organic N. Mineralization from 2021 Credited Towards Future Years

Amount of Organic Nitrogen Left to Mineralize for 2022	972
Amount of Organic Nitrogen Left to Mineralize for 2023	778
Amount of Organic Nitrogen Left to Mineralize for 2024	700

### TOTAL NUTRIENTS APPLIED TO FIELD THIS YEAR

Lbs PAN per Acre	75
Lbs P per Acre	4
Lbs K per Acre	21
Dry tons material ac.	1.0

### Notes

ammonium recorded at 50%  
March spray application

\*\* Kmin =

#### Mineralization factors

	Time /Yrs	Unstabilized	Aerobic	Anaerobic	Compost	Other Enter Info
This Year	0-1	0.4	0.30	0.20	0.10	
Last Year	1-2	0.2	0.15	0.10	0.05	
2 Years Ago	2-3	0.1	0.08	0.05	0.03	
3 Years Ago	3-4	0.05	0.04	0.03	0.03	

Note: Other mineralization factors may be used with DNREC aproval

\*\*\*\* PPM / 10,000 is equal to percent  
Percent X 10,000 is equal to PPM

P205 X 0.44 is equal to P

Version 10/23/14

# **APPENDIX C**

**GROUNDWATER MONITORING**

**DIRECTION OF GROUNDWATER FLOW**

**AVERAGE SHWT SPREADSHEET**



August 27, 2021

Mr. Brian Churchill  
DNREC, Surface Water Discharges Section  
89 Kings Highway  
Dover, DE 19901

RE: Duffield Associates, LLC Project No. 11191.EA  
Clean Delaware, LLC  
Class B Sanitary and Non-Sanitary Wastes, Slow Rate Land Treatment Sites  
Milton Farm, Permit Number AGU 1702-S-03  
Quarterly Groundwater Monitoring Report

Dear Mr. Churchill:

Duffield Associates, LLC (Duffield) has prepared this letter report to summarize groundwater monitoring for the Clean Delaware, LLC land treatment farm in Milton, Delaware. The monitoring was performed in accordance with requirements included in State Permit Number AGU 1702-S-03, issued by the Delaware Department of Natural Resources and Environmental Control (DNREC), Surface Water Discharges Section, effective January 1, 2018. This report includes data collected through August 2021.

Per the requirements included in the referenced permit, the frequency of groundwater monitoring at the project site is performed as follows:

- The collection of groundwater samples for laboratory analysis is required on a quarterly basis for monitor wells 242592, 242593, 242594, 242949, 242950, 242951, 242955, and 242956; and
- The collection of groundwater samples for laboratory analysis is required every other month for monitor wells 242952, 242953, and 242954.

The last bi-monthly groundwater monitoring was completed in July 2021 and the last quarterly groundwater monitoring was completed in August 2021 as follows:

- The depth to water was measured in all of the monitoring wells using an electronic water level indicator;
- A minimum of three volumes of water was removed from the wells being sampled, or the wells were bailed dry and allowed to recharge prior to sampling;
- Field measurements of pH, temperature, conductivity, and dissolved oxygen were recorded using an electronic water quality meter; and
- Groundwater samples were collected in laboratory-prepared bottleware, placed on ice in a transport cooler, and submitted to Envirocorp Laboratories, Inc. on the day of sampling.

### **GROUNDWATER ELEVATIONS AND FLOW DIRECTION**

Water table elevations recorded in the monitoring wells to date are summarized on the table and graph in Attachment 1: Groundwater Elevation Data. The aerial photograph in Attachment 1 includes the well locations, groundwater elevations, contours of equal groundwater elevation, and direction of groundwater flow for August 2021.

Groundwater elevations consistently increased from August 2020 and record high groundwater elevations were recorded in wells 242592, 242953, 242955, and 242956 during February 2021. The water levels have since dropped off going into the summer months, and have been reduced by an average of more than three feet between March and August 2021. The difference between record high and record low water levels recorded to date averages approximately 4 to 4.5 feet.

The direction of groundwater flow in August 2021 was predominantly easterly, with a slight northerly trend towards Ingram Branch on the northern portion of the site. This groundwater flow configuration has been fairly consistent for the monitoring completed to date. Groundwater elevations typically drop by 6 to 7 feet from the farthest up gradient well locations to the farthest down gradient well locations.

### **LABORATORY ANALYSIS**

The groundwater samples were submitted to Envirocorp Labs, Inc. for analysis of the following:

- Nitrates;
- Ammonia Nitrogen;
- Total Nitrogen;
- Total Phosphorus;
- Chlorides;
- Sodium;
- Total Dissolved Solids (TDS);
- Fecal Coliform; and
- Enterococcus.

Copies of the laboratory reports for the July and August 2021 monitoring events are enclosed as Attachment 2: Laboratory Reports. A summary of the laboratory analysis is included in the summary tables in Attachment 3, and graphical presentations of nitrate concentrations compiled to date are included as Attachment 4. The laboratory results are summarized and discussed as follows.

#### **Nitrates**

Well Number	Historical Range in Concentration	Concentration Range 2018 and 2019	Concentration Range 2020	Concentration Range Jan to May 2021	Concentration July/Aug 2021
242592	1.32 to 23.3	1.32 to 14.3	11.5 to 21.8	12.2 to 21.9	21.9
242593	8.95 to 157	8.95 to 53.7	21.9 to 30.6	11.6 to 22.5	28.6
242594	7.74 to 342	14 to 121	17.9 to 30	13.5 to 24.7	30.4
242949	1.98 to 57.9	1.98 to 10.0	5.31 to 12.9	10.5 to 13.0	9.62
242950	1.68 to 25.5	1.68 to 5.32	3.76 to 7.44	6.53 to 10.2	19.3
242951	0.317 to 40.1	0.317 to 9.25	2.08 to 4.66	0.32 to 0.57	11.7
242952	9.21 to 30.8	9.31 to 15.3	13.9 to 17.4	12.4 to 14.2	11.8
242953	3.63 to 44.6	3.63 to 16.2	7.18 to 9.34	11.3 to 15.6	13.2
242954	2.4 to 89.1	2.4 to 23	5.97 to 9.7	7.43 to 9.59	9.88
242955	1.05 to 19.0	6.13 to 19.0	7.36 to 10.5	15.3 to 16.5	11.1
242956	2.56 to 32	14.9 to 32	25.6 to 26.9	7.39 to 24.3	24.6

The Environmental Protection Agency (EPA) allows a maximum contaminant level (MCL) of 10 ppm in public drinking water supplies. The nitrate concentrations exceeded the MCL in 9 of the 11 monitoring wells during the July-August 2021 sampling events. The trends in those wells are discussed as follows.

#### Well 242592

Well 242592 is an up gradient well located along Route 30. Nitrate concentrations historically ranged between 10 ppm and 15 ppm since late 2017. The concentration of 21.8 ppm reported in August 2020 was one of the highest concentrations reported for that well location. The concentration dropped off to 19.9 ppm in November 2020 and 12.2 ppm in February 2021. Nitrates were reported at 21.9 ppm in both May and August 2021 approaching the highest concentration recorded of 23.3 ppm. Up-gradient land use is agricultural, and more recently a regional wastewater disposal facility.

#### Well 242593

Well 242593 is located on the north end of the Site, and nitrate concentrations often exceeded 100 ppm prior to 2016. The nitrate concentrations followed an overall decreasing trend from August 2017 to February 2019, and were reported as low as 8.95 ppm. An increasing trend occurred during 2019, and nitrates have ranged from about 15 ppm to 30 ppm since that time. The concentration recently dropped off to 11.6 ppm in May 2021, but increased to 28.6 ppm in August 2021.

#### Well 242594

Well 242594 is located within the north application field. Nitrate concentrations ranged from about 100 ppm to 350 ppm from initial monitoring in June 2013 to early 2016. The concentrations fluctuated from 2016 through February 2018, and then dropped off ranging from 7.74 ppm to 30 ppm since that time. Nitrates were last reported at 30.4 ppm in August 2021.

#### Well 242950

Well 242950 is centrally located along the down-gradient border of the Site, up gradient of Application Fields # 6 and #7. Nitrate concentrations in samples collected from this well ranged from approximately 10 ppm to 25 ppm from June 2013 to the end of 2015. The concentrations were reduced and remained below 5 ppm, for the most part, from February 2016 to January 2020. The nitrate concentrations have since followed an increasing trend and were last reported at 19.3 ppm in August 2021.

#### Well 242952

Well 242952 is located up gradient of Application Fields # 6 and #7. Nitrate concentrations in samples collected from this well have ranged from approximately 10 ppm to 30 ppm. The concentrations have remained below 20 ppm since November 2017. Nitrate concentrations have been reduced over the last four monitoring events and were last reported at 11.8 ppm in July 2021. The off-site land use up gradient of this well is agricultural.

#### Well 242955

Well 242955 is located in an up-gradient position along Route 30. Nitrate concentrations followed an increasing trend from late 2016 to late 2018 reaching a concentration of 18.9 ppm. A decreasing trend occurred through 2019 with a concentration of 6.13 ppm reported in November 2019. Nitrate

concentrations then followed another increasing trend reaching 16.5 ppm in February 2021. The concentrations have since dropped off to 11.1 ppm in August 2021.

#### Well 242956

Well 242956 is located within the application field just west of the site building facilities. Nitrate concentrations have fluctuated from approximately 2.5 ppm to 30 ppm, and more recently showed an overall decreasing trend from February 2019 to November 2020. The concentration dropped from 24.5 ppm in February 2021 to 7.39 in May 2021, and then increased to 24.6 ppm in August 2021.

#### Wells near Residential Area (242953 and 242954)

The concentrations of nitrates in both wells had remained below the EPA MCL since July 2018 (242954) and September 2018 (242953).

Nitrates in well 242953 increased to 9.34 ppm in November 2020, and exceeded the MCL at 13 ppm in January 2021, 15.6 ppm in May 2021, and 13.2 ppm in July 2021.

Nitrates in well 242954 consistently exceeded 10 ppm from June 2013 to May 2018, and were reported as high as 89.1 ppm. Nitrate concentrations have remained below the MCL of 10 ppm since July 2018 and were last reported at 9.88 ppm in July 2021. Nitrates are now being reported at lower or comparable concentrations in these down gradient wells, when compared to the monitoring well up gradient of Application Fields #6 and #7 (well 242952). Nitrates in well 242952 have ranged from 11.8 ppm to 17.4 ppm over the past year of monitoring.

#### **Chlorides**

Well Number	Historical Range in Concentration	Concentration Range 2018 and 2019	Concentration Range 2020	Concentration Range Jan to May 2021	Concentration July/Aug 2021
242592	20.9 to 148	31.1 to 113	38 to 119	29.2 to 66.2	68
242593	4.85 to 67.7	4.85 to 37.2	8.98 to 16.9	12.2 to 20.1	25.4
242594	3.79 to 81.9	9.99 to 81.9	7.52 to 14.9	3.79 to 6.71	12.2
242949	3.21 to 21.6	3.7 to 9.17	6.73 to 18.5	14.1 to 14.8	23.8
242950	2.74 to 14.5	2.74 to 7.3	3.99 to 9.73	9.31 to 10.8	25.9
242951	5.92 to 25.9	5.92 to 16.4	8.01 to 9.54	11.9 to 21.9	26.6
242952	15.9 to 69.3	21.7 to 69.3	22.1 to 29.3	29.2 to 31.3	24.4
242953	5.83 to 39.1	5.83 to 14.3	9.22 to 9.89	12.7 to 22.7	11.9
242954	2.18 to 67.2	2.18 to 17.1	7.18 to 10.3	12.2 to 15.7	14.2
242955	20.6 to 274	20.6 to 138	35.4 to 158	36.1 to 36.8	68
242956	7.16 to 71.6	19.8 to 52.5	40.4 to 67.1	13.4 to 36.6	56.7

Chloride concentrations increased at all of the well locations between May and August 2021 with the exception of wells 242952 and 242953. The concentration of 26.6 ppm reported in well 242951 during August 2021 is the highest concentration reported to date.

The EPA maintains a Secondary Drinking Water MCL of 250 ppm for chlorides. Secondary standards are for water aesthetics and are not enforceable. None of the chloride concentrations reported to date have exceeded the Secondary MCL of 250 ppm with one exception. The EPA Secondary MCL was exceeded in well 242955 during November 2015.



## Sodium

Well Number	Historical Range in Concentration	Concentration Range 2018 and 2019	Concentration Range 2020	Concentration Range Jan to May 2021	Concentration July/Aug 2021
242592	9.4 to 62.4	10.4 to 62.4	14.4 to 45.2	9.4 to 33.5	36.6
242593	3.33 to 36.1	7.0 to 26.6	6.23 to 22.4	3.33 to 6.03	8.51
242594	7.02 to 97.3	29.3 to 48.8	7.02 to 30.5	12.6 to 16.2	11.5
242949	3.7 to 45.8	5.0 to 45.8	3.7 to 8.17	4.1 to 6.47	6.03
242950	1.93 to 6.85	2.58 to 4.8	1.93 to 4.03	2.79 to 4.41	6.06
242951	2.38 to 18.1	3.4 to 18.1	2.38 to 5.92	5.55 to 6.35	5.06
242952	5.74 to 39.6	10.1 to 39.6	5.74 to 20.3	9.05 to 12.0	8.3
242953	3.08 to 14.7	4.3 to 13.1	3.77 to 5.61	3.08 to 4.96	5.62
242954	3.74 to 35.5	5.6 to 15.1	3.74 to 6.28	4.16 to 5.48	4.87
242955	8.88 to 128	26.5 to 128	11.4 to 72.5	15.3 to 17.9	33.4
242956	13.0 to 59.3	30.3 to 51.4	13 to 64.4	16.5 to 22.3	33.4

Sodium concentrations increased between the May and July-August 2021 events in six of the 11 wells. The concentrations reported in July and August 2021 were within historical ranges previously reported in the wells. Sodium is not included on the EPA's Primary or Secondary Drinking Water Standard MCL lists.

## Phosphorus

Well Number	Highest Reported Concentration	Concentration Range 2018 and 2019	Concentration Range 2020	Concentration Range Jan to May 2021	Concentration July/Aug 2021
242592	1.48	Not Detected to 1.14	Not Detected to 0.16	<0.05 to 0.06	0.08
242593	1.09	Not Detected	Not Detected to 0.16	0.13 to 1.09	0.07
242594	1.35	Not Detected to 0.5	Not Detected to 0.19	0.19 to 1.02	0.5
242949	0.719	Not Detected	Not Detected to 0.13	<0.05 to 0.24	0.07
242950	0.157	Not Detected	Not Detected to 0.10	<0.05	0.05
242951	0.11	Not Detected	Not Detected to 0.15	<0.05 to 0.11	0.08
242952	0.803	Not Detected to 0.6	Not Detected to 0.16	<0.05 to 0.16	0.20
242953	5.20	Not Detected to 0.11	Not Detected to 0.21	<0.05 to 0.18	0.07
242954	1.80	Not Detected to 0.05	Not Detected to 0.15	<0.05 to 0.59	0.28
242955	2.53	Not Detected to 0.06	Not Detected to 0.20	<0.05 to 0.76	0.27
242956	1.57	Not Detected to 0.06	Not Detected to 0.17	0.05 to 0.28	0.18

Phosphorus was detected above reporting levels in the groundwater samples collected from all of the monitoring wells during July and August 2021 monitoring events. The concentrations reported in July and August 2021 were within historical ranges previously reported in the wells.

## Total Dissolved Solids (TDS)

Well Number	Historical Range in Concentration	Concentration Range 2018 and 2019	Concentration Range 2020	Concentration Range Jan to May 2021	Concentration July/Aug 2021
242592	167 to 390	186 to 390	238 to 404	212 to 355	418
242593	110 to 804	160 to 798	284 to 354	218 to 268	468
242594	256 to 2,430	374 to 1,470	256 to 420	305 to 352	445
242949	8.2 to 440	88 to 176	106 to 198	228	250
242950	53 to 212	82 to 126	56 to 150	152 to 162	295
242951	92 to 284	118 to 218	92 to 208	150 to 198	225
242952	96 to 365	142 to 342	156 to 238	208 to 232	205
242953	76 to 357	76 to 132	78 to 172	132 to 295	170
242954	78 to 724	98 to 198	86 to 198	152 to 160	155
242955	114 to 425	180 to 360	210 to 326	238 to 285	295
242956	95 to 360	168 to 360	242 to 340	178 to 290	378

Record high concentrations of TDS were reported in wells 242592 and 242950 and 242956 in July and August 2021. The remaining concentrations fell within historical ranges. The EPA maintains a Secondary Drinking Water MCL of 500 ppm for TDS. TDS concentrations previously exceeded 500 ppm at well locations 242593, 242594 and 242954. However, all TDS concentrations have been reported below the Secondary MCL of 500 ppm since 2018.

### **Fecal Coliform Bacteria (FCB)**

Well Number	Highest Reported Concentration	Concentration Range 2018 through 2020	Concentration Range Jan to May 2021	Concentration July/Aug 2021
242592	1.8	Not Detected to 4	Not Detected	Not Detected
242593	2.0	Not Detected to >160	Not Detected	Not Detected
242594	2.0	Not Detected	Not Detected	Not Detected
242949	7.8	Not Detected to 2	Not Detected	Not Detected
242950	13	Not Detected to 2	Not Detected	Not Detected
242951	1.8	Not Detected to 8	Not Detected	Not Detected
242952	Not Detected	Not Detected	Not Detected	Not Detected
242953	Not Detected	Not Detected	Not Detected	Not Detected
242954	Not Detected	Not Detected	Not Detected	Not Detected
242955	4.5	Not Detected to 94	Not Detected	Not Detected
242956	4.5	Not Detected	Not Detected	Not Detected

FCB were not detected in the groundwater samples collected during November 2020, and during the 2021 monitoring events completed to date. FCB have not been detected to date in samples collected from up gradient monitor well 242952, and down gradient wells 242953 and 242954.

### **Enterococcus Bacteria (EB)**

Well Number	Highest Reported Concentration	Concentration Range 2018 through 2020	Concentration Range Jan to May 2021	Concentration July/Aug 2021
242592	529.8	2 to 36.8	6.3 to 24.2	28.8
242593	>2,419.6	1 to >2,419.6	98.3 to >2,419.6	38.3
242594	579.4	4 to 436	67.6 to 579.4	42.2
242949	1,732.9	Not Detected to 290.9	1.0 to 135.4	19.9
242950	93.3	1 to 131.4	20.9 to 30.9	83.9
242951	980.4	Not Detected to 28.1	13.4 to 980.4	30.1
242952	>2,419.6	Not Detected to >2,419.6	9.7 to 167.9	302.6
242953	>2,419.6	Not Detected to >2,419.6	1.0 to 107.1	5.2
242954	>2,419.6	Not Detected to 18.5	156.4 to >2,419.6	>2,419.6
242955	>2,419.6	25.9 to 980.4	285.1 to >2,419.6	>2,419.6
242956	>2,419.6	1 to <2,419.6	5.2 to 191.8	501.2

Enterococcus bacteria have been detected in groundwater samples collected from all the monitoring wells, and the concentrations have been quite variable. New record high concentrations were reported in May 2021 for wells 242593, 242594, and 242951. The concentrations in these three wells were substantially reduced during the July-August monitoring period. The highest concentrations of enterococcus were more recently reported in wells 242955 and 242956. Well 242955 is located along the west up gradient border of the Site. Well 242956 is located down gradient of well 242955.

### **SUMMARY**

Groundwater elevations consistently increased from August 2020 and record high groundwater elevations were recorded in wells 242592, 242953, 242955, and 242956 during February 2021. The

Mr. Brian Churchill  
RE: Project No. 11191.EA  
August 23, 2021  
Page 7



water levels have since dropped off going into the summer months, and were reduced by an average of more than three feet between March and August 2021.

The nitrate concentrations exceeded the MCL in 9 of the 11 monitoring wells during the July-August 2021 sampling events. The concentrations of nitrates in the two wells on the down gradient boundary of the Site remained below the EPA MCL in July 2018 (242954) and September 2018 (242953). Nitrates in well 242953 have more recently exceeded the MCL at 13 ppm in January 2021, 15.6 ppm in May 2021, and 13.2 ppm in July 2021. Nitrates in well 242954 consistently exceeded 10 ppm from June 2013 to May 2018, and were reported as high as 89.1 ppm. Nitrate concentrations were reduced and have remained below the MCL of 10 ppm since July 2018 and were last reported at 9.88 ppm in July 2021.

Chloride concentrations increased at all of the well locations between May and August 2021 with the exception of wells 242952 and 242953. The concentration of 26.6 ppm reported in well 242951 during August 2021 is the highest concentration reported to date.

Record high concentrations of TDS were reported in wells 242592 and 242950 and 242956 in July and August 2021.

Phosphorus was reported in the groundwater samples collected from all of the monitoring wells during July and August 2021 monitoring events, at concentrations within historical ranges previously reported.

FCB were not detected in the groundwater samples collected during November 2020, and during the 2021 monitoring events completed to date.

New record high concentrations of enterococcus were reported in May 2021 for wells 242593, 242594, and 242951. The concentrations in these three wells were substantially reduced during the July-August monitoring period. The highest concentrations of enterococcus were more recently reported in wells 242955 and 242956.

The next bi-monthly sampling event is scheduled for September 2021 and the next quarterly event is scheduled for November 2021.

Please contact us if you have any questions.

Very truly yours,

DUFFIELD ASSOCIATES, LLC

Savannah Sipes  
Project Engineer

Steven F. Cahill, P.G.  
Senior Project Manager

SAS/SFC:cpt

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Enclosures: Attachment 1 – Groundwater Elevation Data and Groundwater Flow Sketches  
Attachment 2 – Laboratory Reports.  
Attachment 3 – Summary Tables of Laboratory Data  
Attachment 4 – Graphical Presentation of Nitrate Levels in Groundwater Samples

cc: Mr. Gerry Desmond – Clean Delaware, LLC

# **ATTACHMENT 1**

## **GROUNDWATER ELEVATION DATA AND GROUNDWATER FLOW SKETCH**



**Milton Farm Gorundater Elevations in Monitor Wella**

<b>Well ID</b>	<b>242592</b>	<b>242593</b>	<b>242594</b>	<b>242949</b>	<b>242950</b>	<b>242951</b>	<b>242952</b>	<b>242953</b>	<b>242954</b>	<b>242955</b>	<b>242956</b>
<b>Casing El.</b>	34.24	34.07	36.18	28.92	29.68	36.76	31.87	34.8	34.33	34.64	33.36
<b>Date</b>	<b>Groundwater Elevations (feet above mean sea level)</b>										
May-13	21.54	17.78	19.48	17.32	16.56	19.69	17.8	14.9	14.83	21.29	19.23
Sep-13	22.54	17.79	19.3	17.39	16.78	19.95	15.22	15.23	14.5	21.33	19.42
Dec-13	21.38	17.87	19.03	17.19	16.4	19.76	17.78	14.8	14.05	21.23	19.16
Feb-14	22.44	18.5	20.18	18.02	17.5	21.09	18.98	15.9	15.05	22.55	20.37
Mar-14	22.34	18.46	19.96	18.01	17.65	21.29	19.24	16.2	15.44	22.52	20.43
Apr-14	22.34	18.48	20.02	18.03	17.82	21.48	19.44	16.47	15.7	22.56	20.54
May-14	21.93	18.18	19.55	17.6	17.28	20.82	18.83	15.91	15.11	22.05	20
Jun-14	21.34	17.44	18.9	17.02	16.38	19.98	18.12	14.98	14.34	21.35	19.26
Jul-14	21.09	17.42	18.6	16.82	16.02	19.48	17.61	14.42	13.79	20.99	18.87
Aug-14	20.72	17.39	18.36	16.62	15.73	18.9	17.06	14.04	13.31	20.55	18.43
Sep-14	19.82	17.01	17.81	16.22	15.19	18.06	16.32	13.58	12.85	19.61	17.75
Nov-14	19.7	17.01	17.67	16.07	14.85	17.88	15.92	13.14	12.41	19.48	17.53
Dec-14	21.74	17.7	18.47	16.93	15.39	18.36	16.19	13.42	12.6	20.47	18.26
Jan-15	20.87	17.72	18.66	16.97	15.73	18.88	16.76	13.89	13.09	20.68	18.54
Mar-15	22.15	18.57	19.78	18.07	17.18	20.55	18.66	15.52	14.7	23.2	19.97
May-15	21.61	17.92	19.16	17.21	16.55	20.22	18.14	15.05	14.38	21.62	19.42
Jun-15	21.15	17.65	18.79	16.9	16.12	19.59	17.55	14.59	13.92	21.07	18.96
Jul-15	20.77	17.43	18.42	16.64	15.69	18.95	17.01	14.11	13.39	20.63	18.48
Aug-15	20.16	16.79	17.92	16.17	15.06	18.37	16.53	13.52	12.93	20.02	17.96
Sep-15	19.26	15.79	16.9	15.06	13.99	17.56	15.72	12.47	12.05	19.13	17.01
Nov-15	19.93	17.08	17.78	16.08	14.81	18.02	15.95	13.08	12.36	19.77	17.63
Jan-16	21.03	17.86	18.8	17.12	15.86	19.09	16.79	13.86	13.04	20.91	18.69
Feb-16	21.75	18.2	19.37	17.59	16.67	20.23	17.9	14.87	13.99	21.75	19.52
Mar-16	21.95	18.28	19.6	18.62	17.09	20.66	18.52	15.52	14.69	22.04	19.88
May-16	21.56	18	19.16	17.38	16.56	19.92	17.82	14.99	14.14	21.48	19.32
Jul-16	21.22	17.51	18.84	16.86	16.25	19.75	17.86	14.86	14.2	21.22	19.12
Aug-16	20.76	16.94	18.22	16.29	15.34	18.99	17.12	13.76	13.26	20.68	18.44
Sep-16	19.85	17.69	17.82	16.17	15.11	18.15	16.34	13.49	12.85	19.69	17.77
Nov-16	22.79	18.68	20.15	17.99	17.79	21.44	19.46	16.45	15.71	22.66	20.59
Jan-17	21.34	17.83	18.79	17.14	16.35	19.82	17.78	14.81	13.43	21.35	19.21
Feb-17	21.54	17.95	19.13	17.17	16.27	19.86	17.61	14.58	13.79	21.52	19.23
Mar-17	21.24	17.76	18.89	17.07	16.12	19.61	17.46	14.44	13.65	21.19	19

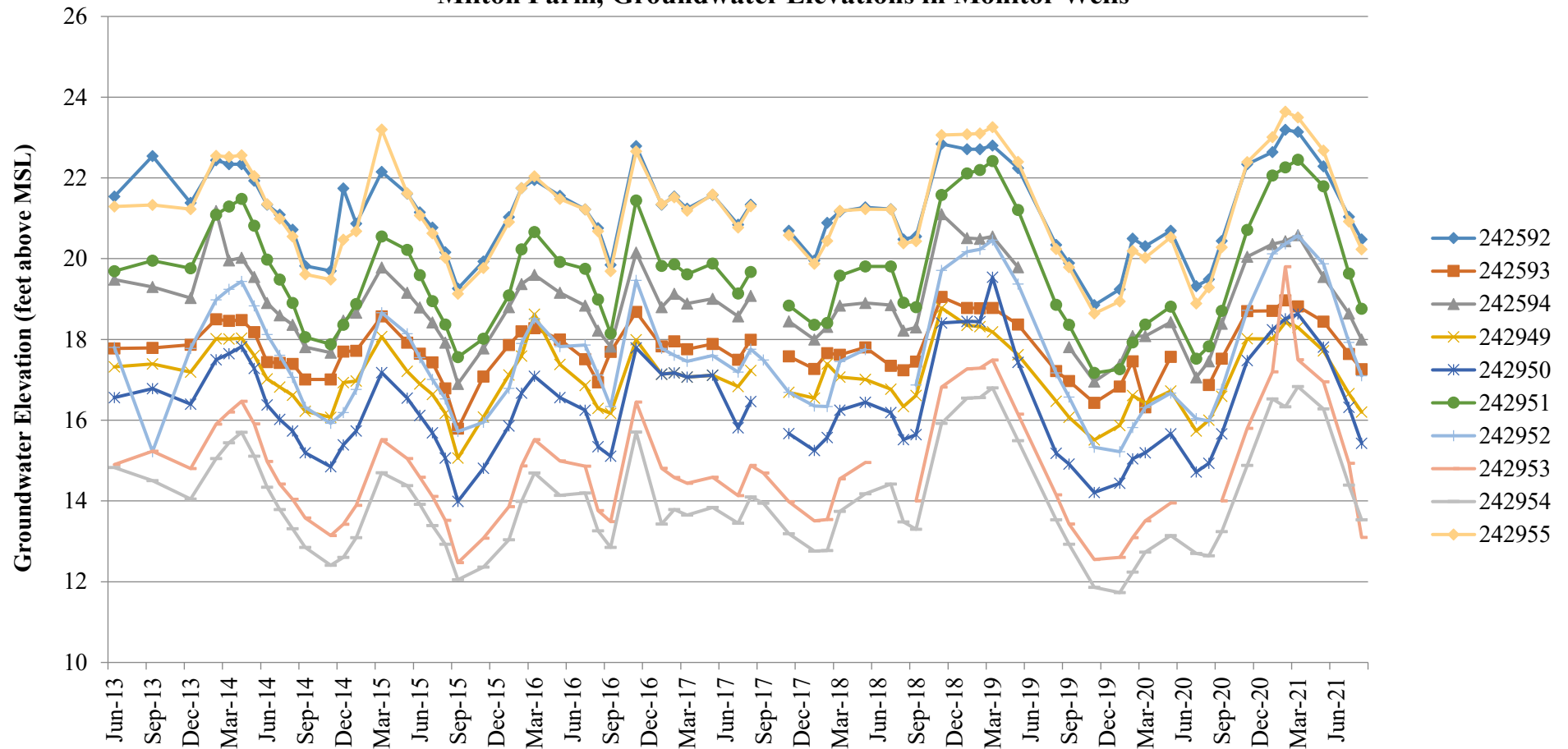
**Milton Farm Gorundater Elevations in Monitor Wella**

<b>Well ID</b>	<b>242592</b>	<b>242593</b>	<b>242594</b>	<b>242949</b>	<b>242950</b>	<b>242951</b>	<b>242952</b>	<b>242953</b>	<b>242954</b>	<b>242955</b>	<b>242956</b>
<b>Casing El.</b>	34.24	34.07	36.18	28.92	29.68	36.76	31.87	34.8	34.33	34.64	33.36
<b>Date</b>	<b>Groundwater Elevations (feet above mean sea level)</b>										
May-17	21.58	17.89	19.01	17.11	16.23	19.88	17.6	14.59	13.84	21.59	19.27
Jul-17	20.84	17.5	18.57	16.83	15.81	19.14	17.19	14.13	13.45	20.77	18.67
Aug-17	21.34	17.99	19.08	17.23	16.46	19.67	17.76	14.88	14.1	21.3	19.19
Sep-17	-	-	-	-	-	-	17.49	14.69	13.94	-	-
Nov-17	20.69	17.58	18.45	16.69	15.67	18.84	16.69	13.98	13.19	20.58	18.46
Jan-18	19.96	17.27	18	16.55	15.25	18.36	16.35	13.51	12.76	19.87	17.94
Feb-18	20.89	17.66	18.31	17.39	15.57	18.41	16.34	13.54	12.77	20.44	18.27
Mar-18	21.17	17.62	18.84	17.07	16.25	19.58	17.45	14.55	13.74	21.19	19.01
May-18	21.27	17.8	18.9	17.01	16.44	19.81	17.75	14.95	14.18	21.23	19.1
Jul-18	21.23	17.35	18.85	16.77	16.19	19.81	-	-	14.42	21.22	19.18
Aug-18	20.48	17.24	18.22	16.34	15.52	18.91	-	-	13.48	20.38	18.34
Sep-18	20.55	17.45	18.3	16.61	15.64	18.8	16.87	14	13.3	20.43	18.39
Nov-18	22.84	19.05	21.1	18.78	18.41	21.58	19.71	16.82	15.92	23.06	20.98
Jan-19	22.71	18.78	20.51	18.35	18.45	22.11	20.17	17.27	16.55	23.08	21.12
Feb-19	22.71	18.77	20.49	18.32	18.44	22.2	20.23	17.29	16.56	23.1	21.12
Mar-19	22.8	18.78	20.55	18.19	19.54	22.42	20.46	17.49	16.8	23.26	21.28
May-19	22.24	18.37	19.79	17.62	17.43	21.21	19.37	16.15	15.49	22.4	20.32
Aug-19	20.34	17.22	NS	16.47	15.18	18.86	17.17	14.15	13.53	20.24	18.26
Sep-19	19.89	16.97	17.81	16.07	14.91	18.36	16.57	13.43	12.93	19.79	17.81
Nov-19	18.85	16.43	16.96	15.51	14.21	17.17	15.33	12.55	11.86	18.64	16.76
Jan-20	19.24	16.83	17.38	15.87	14.44	17.26	15.22	12.6	11.73	18.94	17.08
Feb-20	20.5	17.46	18.08	16.61	15.04	17.93	15.82	13.09	12.24	20.19	17.83
Mar-20	20.31	16.32	18.08	16.42	15.19	18.37	16.31	13.51	12.73	20.02	17.94
May-20	20.69	17.57	18.43	16.72	15.66	18.81	16.67	13.95	13.14	20.53	18.36
Jul-20	19.32		17.06	15.73	14.72	17.52	16.04		12.70	18.89	15.87
Aug-20	19.49	16.87	17.46	16.00	14.93	17.83	15.98		12.64	19.29	17.39
Sep-20	20.44	17.52	18.39	16.59	15.66	18.71	16.76	14.00	13.24	20.28	18.29
Nov-20	22.34	18.70	20.05	18.02	17.48	20.71	18.72	15.80	14.88	22.39	20.21
Jan-21	22.64	18.71	20.36	18.01	18.24	22.06	20.12	17.20	16.53	23.01	20.97
Feb-21	23.19	18.97	20.43	18.42	18.51	22.26	20.37	19.80	16.33	23.64	21.36
Mar-21	23.14	18.82	20.58	18.30	18.63	22.45	20.57	17.50	16.83	23.50	21.39
May-21	22.29	18.44	19.55	17.72	17.81	21.79	19.87	16.95	16.28	22.68	20.64

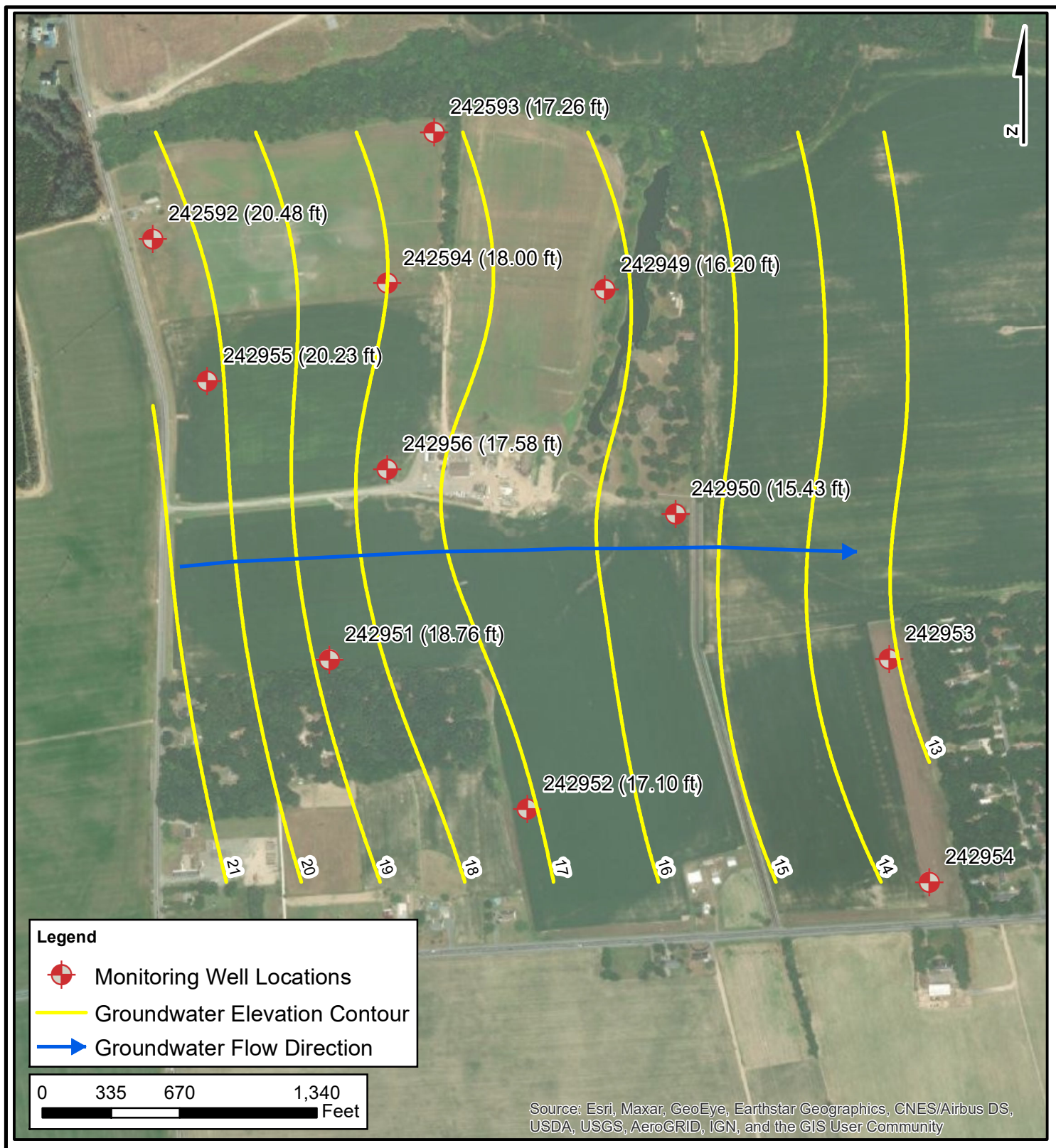
**Milton Farm Groundwater Elevations in Monitor Wells**


<b>Well ID</b>	<b>242592</b>	<b>242593</b>	<b>242594</b>	<b>242949</b>	<b>242950</b>	<b>242951</b>	<b>242952</b>	<b>242953</b>	<b>242954</b>	<b>242955</b>	<b>242956</b>
<b>Casing El.</b>	34.24	34.07	36.18	28.92	29.68	36.76	31.87	34.8	34.33	34.64	33.36
<b>Date</b>	<b>Groundwater Elevations (feet above mean sea level)</b>										
Jul-21	21.04	17.64	18.64	16.66	16.32	19.63	17.93	14.93	14.39	20.92	18.91
Aug-21	20.48	17.26	18	16.2	15.43	18.76	17.1	13.1	13.53	20.23	17.58

**Milton Farm, Groundwater Elevations in Monitor Wells**







Date: 08/2021	<b>GROUNDWATER FLOW SKETCH</b>  <b>Milton Farm</b> <b>14227 Isaacs Road</b>  MILTON~SUSSEX COUNTY~DELAWARE	DESIGNED BY: SFC	 <b>DUFFIELD ASSOCIATES</b> Soil, Water & the Environment  5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL. (302)239-6634 FAX (302)239-8485  OFFICES IN PENNSYLVANIA, SOUTHERN DELAWARE, MARYLAND AND NEW JERSEY  EMAIL: DUFFIELD@DUFFNET.COM
SCALE: AS SHOWN		DRAWN BY: SAS	
PROJECT NO. 11191.EA		CHECKED BY: SFC	
SHEET: ATTACHMENT 1		FILE: 11191.EA.GW_Flow_Sketch.mxd	

# **ATTACHMENT 2**

## **LABORATORY REPORTS**



**ENVIROCORP LABORATORIES INC.**

51 CLARK STREET, HARRINGTON, DE 19952

302-398-4313

[www.envirocorplabs.com](http://www.envirocorplabs.com)

**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**



July 19, 2021

Steve Cahill  
Duffield Associates, Inc.  
5400 Limestone Rd  
Wilmington, DE 19808

RE: Milton Farm

Enclosed are the results of analyses for samples received by our laboratory on 7/6/2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Shelly Bloom  
Supervising Analyst

## Table of Contents

Cover Letter	1
Samples in Report	3
Sample Results	4
Qualifiers and Definitions	7
Chain of Custody PDF	8



**ENVIROCORP LABORATORIES INC.**

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
www.envirocorplabs.com

**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

5400 Limestone Rd

Wilmington, DE 19808

**Project:** Milton Farm**Project Number:** Milton Farm**Reported:** 07/19/2021 11:09

## Sample Summary

Lab ID	Sample	Matrix	Sampled	Received
2106483-01	242952	Ground Water	7/6/2021 8:30	07/06/21 14:20
2106483-02	242953	Ground Water	7/6/2021 9:07	07/06/21 14:20
2106483-03	242954	Ground Water	7/6/2021 9:17	07/06/21 14:20



# ENVIROCORP LABORATORIES INC.

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
www.envirocorplabs.com



**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Milton Farm

5400 Limestone Rd

**Project Number:** Milton Farm

Wilmington, DE 19808

**Reported:** 07/19/2021 11:09

## Analytical Results

**Sample ID:** 242952 **Sample Start:** 07/06/21 08:30  
**Lab ID:** 2106483-01  
**Matrix:** Ground Water  
**Sample Type:** Grab **Received:** 07/06/21 14:20

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	7/6/21 15:33	7/7/21 16:15	HM
Enterococcus	302.6	#/100 mL	1		Enterolert	7/6/21 15:22	7/7/21 16:39	HM
Total Coliform	ND	#/100 mL	2		SM9222-B	7/6/21 15:32	7/7/21 16:13	HM

### Inorganic

Chloride	24.4	mg/L	5.00		EPA 300.0	7/7/21 5:57	7/7/21 05:57	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	7/15/21 11:53	7/15/21 12:40	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	7/7/21 5:57	7/7/21 05:57	MEM
Nitrate as N	11.8	mg/L	2.00		EPA 300.0	7/7/21 5:57	7/7/21 05:57	MEM
Total Dissolved Solids	205	mg/L	12.5		SM2540-C	7/12/21 15:49	7/13/21 16:55	TAS
Total Kjeldahl Nitrogen	0.16	mg/L	0.05		SM4500-Norg-C	7/16/21 11:30	7/16/21 13:06	CK
Total Nitrogen as N	12.0	mg/L	0.0500		[CALC]	7/16/21 11:30	7/16/21 13:06	CK
Total Phosphorus as P	0.20	mg/L	0.05		SM4500-P-F	7/16/21 11:33	7/16/21 13:03	CK

### Metals

Sodium	8.30	mg/L	0.0100		EPA 200.7	7/14/21 12:04	7/14/21 12:04	JMW
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# ENVIROCORP LABORATORIES INC.

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302-398-4313  
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**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Milton Farm

5400 Limestone Rd

**Project Number:** Milton Farm

Wilmington, DE 19808

**Reported:** 07/19/2021 11:09

## Analytical Results

**Sample ID:** 242953 **Sample Start:** 07/06/21 09:07  
**Lab ID:** 2106483-02  
**Matrix:** Ground Water **Received:** 07/06/21 14:20  
**Sample Type:** Grab

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	7/6/21 15:33	7/7/21 16:15	HM
Enterococcus	5.2	#/100 mL	1		Enterolert	7/6/21 15:22	7/7/21 16:39	HM
Total Coliform	ND	#/100 mL	2		SM9222-B	7/6/21 15:32	7/7/21 16:13	HM

### Inorganic

Chloride	11.9	mg/L	0.50		EPA 300.0	7/7/21 6:19	7/7/21 06:19	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	7/15/21 11:53	7/15/21 12:40	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	7/7/21 6:19	7/7/21 06:19	MEM
Nitrate as N	13.2	mg/L	0.20		EPA 300.0	7/7/21 6:19	7/7/21 06:19	MEM
Total Dissolved Solids	170	mg/L	12.5		SM2540-C	7/12/21 15:49	7/13/21 16:55	TAS
Total Kjeldahl Nitrogen	0.10	mg/L	0.05		SM4500-Norg-C	7/16/21 11:30	7/16/21 13:06	CK
Total Nitrogen as N	13.3	mg/L	0.0500		[CALC]	7/16/21 11:30	7/16/21 13:06	CK
Total Phosphorus as P	0.07	mg/L	0.05		SM4500-P-F	7/16/21 11:33	7/16/21 13:03	CK

### Metals

Sodium	5.62	mg/L	0.0100		EPA 200.7	7/14/21 12:07	7/14/21 12:07	JMW
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# ENVIROCORP LABORATORIES INC.

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**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

5400 Limestone Rd

Wilmington, DE 19808

**Project:** Milton Farm

**Project Number:** Milton Farm

**Reported:** 07/19/2021 11:09

## Analytical Results

**Sample ID:** 242954 **Sample Start:** 07/06/21 09:17  
**Lab ID:** 2106483-03  
**Matrix:** Ground Water **Received:** 07/06/21 14:20  
**Sample Type:** Grab

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	7/6/21 15:33	7/7/21 16:15	HM
Enterococcus	>2419.6	#/100 mL	1		Enterolert	7/6/21 15:22	7/7/21 16:39	HM
Total Coliform	56	#/100 mL	2		SM9222-B	7/6/21 15:32	7/7/21 16:13	HM

### Inorganic

Chloride	14.2	mg/L	0.50		EPA 300.0	7/7/21 6:40	7/7/21 06:40	MEM
Ammonia as N	0.08	mg/L	0.05		SM4500-NH3-G	7/15/21 11:53	7/15/21 12:40	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	7/7/21 6:40	7/7/21 06:40	MEM
Nitrate as N	9.88	mg/L	0.20		EPA 300.0	7/7/21 6:40	7/7/21 06:40	MEM
Total Dissolved Solids	155	mg/L	12.5		SM2540-C	7/12/21 15:49	7/13/21 16:55	TAS
Total Kjeldahl Nitrogen	0.35	mg/L	0.05		SM4500-Norg-C	7/16/21 11:30	7/16/21 13:06	CK
Total Nitrogen as N	10.2	mg/L	0.0500		[CALC]	7/16/21 11:30	7/16/21 13:06	CK
Total Phosphorus as P	0.28	mg/L	0.05		SM4500-P-F	7/16/21 11:33	7/16/21 13:03	CK

### Metals

Sodium	4.87	mg/L	0.0100		EPA 200.7	7/14/21 12:11	7/14/21 12:11	JMW
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**ENVIROCORP LABORATORIES INC.**

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
www.envirocorplabs.com

**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**



Duffield Associates, Inc.

5400 Limestone Rd

Wilmington, DE 19808

**Project:** Milton Farm

**Project Number:** Milton Farm

**Reported:** 07/19/2021 11:09

## Notes and Definitions

Item	Definition
<b>Z</b>	>2419.6
<b>Dry-WT</b>	Sample results reported on a dry weight basis.
<b>ND</b>	Analyte NOT DETECTED at or above the reporting limit.
<b>Reporting Limit</b>	Lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.





**Client Name** Duffield Associates, Inc.  
**Contact** Steven Cahill  
**Address** 5400 Limestone Rd.  
 Wilmington, DE 199808  
**Phone** 302-239-6634  
**Fax** 302-239-8485  
**Email** Scahill@duffnet.com



2106483

Duffield Associates, Inc.  
Milton Farm

Containers Received				Administrators Notes				
Type	Q	Poured off	Bacti					
Quant	1	@ Lab	2					
Temperature Upon Receipt 15.4 °C								
Analyses/Method Requested								
		Cl, NO3, TKN, TN	NH3, TP, TDS	Na	FCMF, TCMF	Enterococcus		

Lab I.D (Lab use only)	Sample Description/Location	Sample Date	Time	Matrix	Field		Please check appropriate box for each test requested							
Milton Farm														
v1	242952	7/6/21	0830	GW			X	X	X	X	X			
					Field Notes									
v2	242953	7/6/21	0907	GW			X	X	X	X	X			
					Field Notes									
v3	242954	7/6/21	0917	GW			X	X	X	X	X			
					Field Notes									

Q=Quart (Unpreserved), M=Metals (HNO3), N/P=Nutrients (H2SO4), Bacti=P/A Colilert® (Sodium Thiosulfate), OG=Oil & Grease (HCL)

Sampled by SAS Date 7/6/21 Time 0830  
 Relinquished by SAS Date 7/6/21 Time 1405

Received by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_  
 Received by R. Nulam Date 7/6/21 Time 1400



**ENVIROCORP LABORATORIES INC.**

51 CLARK STREET, HARRINGTON, DE 19952

302-398-4313

[www.envirocorplabs.com](http://www.envirocorplabs.com)

**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**



August 18, 2021

Steve Cahill  
Duffield Associates, Inc.  
5400 Limestone Rd  
Wilmington, DE 19808

RE: Milton Farm

Enclosed are the results of analyses for samples received by our laboratory on 8/4/2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Shelly Bloom  
Supervising Analyst

## Table of Contents

Cover Letter	1
Samples in Report	3
Sample Results	4
Qualifiers and Definitions	12
Chain of Custody PDF	13



# ENVIROCORP LABORATORIES INC.

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
www.envirocorplabs.com



**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

5400 Limestone Rd

Wilmington, DE 19808

**Project:** Milton Farm

**Project Number:** Milton Farm

**Reported:** 08/18/2021 13:57

## Sample Summary

Lab ID	Sample	Matrix	Sampled	Received
2107630-01	242592	Ground Water	8/4/2021 10:08	08/04/21 14:18
2107630-02	242593	Ground Water	8/4/2021 10:30	08/04/21 14:18
2107630-03	242594	Ground Water	8/4/2021 10:48	08/04/21 14:18
2107630-04	242949	Ground Water	8/4/2021 11:21	08/04/21 14:18
2107630-05	242950	Ground Water	8/4/2021 11:40	08/04/21 14:18
2107630-06	242951	Ground Water	8/4/2021 12:45	08/04/21 14:18
2107630-07	242955	Ground Water	8/4/2021 9:50	08/04/21 14:18
2107630-08	242956	Ground Water	8/4/2021 12:01	08/04/21 14:18



# ENVIROCORP LABORATORIES INC.

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
www.envirocorplabs.com



**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Milton Farm

5400 Limestone Rd

**Project Number:** Milton Farm

Wilmington, DE 19808

**Reported:** 08/18/2021 13:57

## Analytical Results

**Sample ID:** 242592  
**Lab ID:** 2107630-01  
**Matrix:** Ground Water  
**Sample Type:** Grab

**Sample Start:** 08/04/21 10:08

**Received:** 08/04/21 14:18

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/4/21 16:56	8/5/21 15:39	RD
Enterococcus	28.8	#/100 mL	1		Enterolert	8/4/21 14:36	8/5/21 15:43	RD
Total Coliform	ND	#/100 mL	2		SM9222-B	8/4/21 16:58	8/5/21 15:36	RD

### Inorganic

Chloride	68.0	mg/L	1.50		EPA 300.0	8/4/21 20:16	8/4/21 20:16	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/10/21 10:00	8/10/21 10:47	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/4/21 20:16	8/4/21 20:16	MEM
Nitrate as N	21.9	mg/L	0.60		EPA 300.0	8/4/21 20:16	8/4/21 20:16	MEM
Total Dissolved Solids	418	mg/L	12.5		SM2540-C	8/11/21 7:43	8/12/21 14:34	TAS
Total Kjeldahl Nitrogen	0.30	mg/L	0.05		SM4500-Norg-C	8/13/21 10:56	8/13/21 14:10	JMW
Total Nitrogen as N	22.2	mg/L	0.0500		[CALC]	8/13/21 10:56	8/13/21 14:10	JMW
Total Phosphorus as P	0.08	mg/L	0.05		SM4500-P-F	8/13/21 11:01	8/13/21 13:25	JMW

### Metals

Sodium	36.6	mg/L	0.0100		EPA 200.7	8/18/21 8:00	8/18/21 10:00	JMW
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**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Milton Farm

5400 Limestone Rd

**Project Number:** Milton Farm

Wilmington, DE 19808

**Reported:** 08/18/2021 13:57

## Analytical Results

**Sample ID:** 242593 **Sample Start:** 08/04/21 10:30  
**Lab ID:** 2107630-02  
**Matrix:** Ground Water **Received:** 08/04/21 14:18  
**Sample Type:** Grab

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/4/21 16:56	8/5/21 15:39	RD
Enterococcus	38.3	#/100 mL	1		Enterolert	8/4/21 14:36	8/5/21 15:43	RD
Total Coliform	ND	#/100 mL	2		SM9222-B	8/4/21 16:58	8/5/21 15:36	RD

### Inorganic

Chloride	25.4	mg/L	1.50		EPA 300.0	8/4/21 20:38	8/4/21 20:38	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/10/21 10:00	8/10/21 10:47	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/4/21 20:38	8/4/21 20:38	MEM
Nitrate as N	28.6	mg/L	0.60		EPA 300.0	8/4/21 20:38	8/4/21 20:38	MEM
Total Dissolved Solids	468	mg/L	12.5		SM2540-C	8/11/21 7:43	8/12/21 14:34	TAS
Total Kjeldahl Nitrogen	0.44	mg/L	0.05		SM4500-Norg-C	8/13/21 10:56	8/13/21 14:10	JMW
Total Nitrogen as N	29.1	mg/L	0.0500		[CALC]	8/13/21 10:56	8/13/21 14:10	JMW
Total Phosphorus as P	0.07	mg/L	0.05		SM4500-P-F	8/13/21 11:01	8/13/21 13:25	JMW

### Metals

Sodium	8.51	mg/L	0.0100		EPA 200.7	8/18/21 8:00	8/18/21 10:04	JMW
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# ENVIROCORP LABORATORIES INC.

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**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Milton Farm

5400 Limestone Rd

**Project Number:** Milton Farm

Wilmington, DE 19808

**Reported:** 08/18/2021 13:57

## Analytical Results

**Sample ID:** 242594 **Sample Start:** 08/04/21 10:48  
**Lab ID:** 2107630-03  
**Matrix:** Ground Water **Received:** 08/04/21 14:18  
**Sample Type:** Grab

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/4/21 16:56	8/5/21 15:39	RD
Enterococcus	42.2	#/100 mL	1		Enterolert	8/4/21 14:36	8/5/21 15:43	RD
Total Coliform	ND	#/100 mL	2		SM9222-B	8/4/21 16:58	8/5/21 15:36	RD

### Inorganic

Chloride	12.2	mg/L	1.50		EPA 300.0	8/4/21 20:59	8/4/21 20:59	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/10/21 10:00	8/10/21 10:47	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/4/21 20:59	8/4/21 20:59	MEM
Nitrate as N	30.4	mg/L	0.60		EPA 300.0	8/4/21 20:59	8/4/21 20:59	MEM
Total Dissolved Solids	445	mg/L	12.5		SM2540-C	8/11/21 7:43	8/12/21 14:34	TAS
Total Kjeldahl Nitrogen	0.53	mg/L	0.05		SM4500-Norg-C	8/13/21 10:56	8/13/21 14:10	JMW
Total Nitrogen as N	30.9	mg/L	0.0500		[CALC]	8/13/21 10:56	8/13/21 14:10	JMW
Total Phosphorus as P	0.50	mg/L	0.05		SM4500-P-F	8/13/21 11:01	8/13/21 13:25	JMW

### Metals

Sodium	11.5	mg/L	0.0100		EPA 200.7	8/18/21 8:00	8/18/21 10:07	JMW
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# ENVIROCORP LABORATORIES INC.

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
www.envirocorplabs.com



**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

5400 Limestone Rd

Wilmington, DE 19808

**Project:** Milton Farm

**Project Number:** Milton Farm

**Reported:** 08/18/2021 13:57

## Analytical Results

**Sample ID:** 242949  
**Lab ID:** 2107630-04  
**Matrix:** Ground Water  
**Sample Type:** Grab

**Sample Start:** 08/04/21 11:21

**Received:** 08/04/21 14:18

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/4/21 16:56	8/5/21 15:39	RD
Enterococcus	19.9	#/100 mL	1		Enterolert	8/4/21 14:36	8/5/21 15:43	RD
Total Coliform	6	#/100 mL	2		SM9222-B	8/4/21 16:58	8/5/21 15:36	RD

### Inorganic

Chloride	23.8	mg/L	0.50		EPA 300.0	8/4/21 21:21	8/4/21 21:21	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/10/21 10:00	8/10/21 10:47	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/4/21 21:21	8/4/21 21:21	MEM
Nitrate as N	9.62	mg/L	0.20		EPA 300.0	8/4/21 21:21	8/4/21 21:21	MEM
Total Dissolved Solids	250	mg/L	12.5		SM2540-C	8/11/21 7:43	8/12/21 14:34	TAS
Total Kjeldahl Nitrogen	0.32	mg/L	0.05		SM4500-Norg-C	8/13/21 10:56	8/13/21 14:10	JMW
Total Nitrogen as N	9.93	mg/L	0.0500		[CALC]	8/13/21 10:56	8/13/21 14:10	JMW
Total Phosphorus as P	0.07	mg/L	0.05		SM4500-P-F	8/13/21 11:01	8/13/21 13:25	JMW

### Metals

Sodium	6.03	mg/L	0.0100		EPA 200.7	8/18/21 8:00	8/18/21 10:11	JMW
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**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Milton Farm

5400 Limestone Rd

**Project Number:** Milton Farm

Wilmington, DE 19808

**Reported:** 08/18/2021 13:57

## Analytical Results

**Sample ID:** 242950 **Sample Start:** 08/04/21 11:40  
**Lab ID:** 2107630-05  
**Matrix:** Ground Water **Received:** 08/04/21 14:18  
**Sample Type:** Grab

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/4/21 16:56	8/5/21 15:39	RD
Enterococcus	83.9	#/100 mL	1		Enterolert	8/4/21 14:36	8/5/21 15:43	RD
Total Coliform	22	#/100 mL	2		SM9222-B	8/4/21 16:58	8/5/21 15:36	RD

### Inorganic

Chloride	25.9	mg/L	0.50		EPA 300.0	8/4/21 21:42	8/4/21 21:42	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/10/21 10:00	8/10/21 10:47	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/4/21 21:42	8/4/21 21:42	MEM
Nitrate as N	19.3	mg/L	0.20		EPA 300.0	8/4/21 21:42	8/4/21 21:42	MEM
Total Dissolved Solids	295	mg/L	12.5		SM2540-C	8/11/21 7:43	8/12/21 14:34	TAS
Total Kjeldahl Nitrogen	0.28	mg/L	0.05		SM4500-Norg-C	8/13/21 10:56	8/13/21 14:10	JMW
Total Nitrogen as N	19.5	mg/L	0.0500		[CALC]	8/13/21 10:56	8/13/21 14:10	JMW
Total Phosphorus as P	0.05	mg/L	0.05		SM4500-P-F	8/13/21 11:01	8/13/21 13:25	JMW

### Metals

Sodium	6.06	mg/L	0.0100		EPA 200.7	8/18/21 8:00	8/18/21 10:14	JMW
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**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Milton Farm

5400 Limestone Rd

**Project Number:** Milton Farm

Wilmington, DE 19808

**Reported:** 08/18/2021 13:57

## Analytical Results

**Sample ID:** 242951  
**Lab ID:** 2107630-06  
**Matrix:** Ground Water  
**Sample Type:** Grab

**Sample Start:** 08/04/21 12:45

**Received:** 08/04/21 14:18

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/4/21 16:56	8/5/21 15:39	RD
Enterococcus	30.1	#/100 mL	1		Enterolert	8/4/21 14:36	8/5/21 15:43	RD
Total Coliform	ND	#/100 mL	2		SM9222-B	8/4/21 16:58	8/5/21 15:36	RD

### Inorganic

Chloride	26.6	mg/L	0.50		EPA 300.0	8/4/21 22:04	8/4/21 22:04	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/10/21 10:00	8/10/21 10:47	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/4/21 22:04	8/4/21 22:04	MEM
Nitrate as N	11.7	mg/L	0.20		EPA 300.0	8/4/21 22:04	8/4/21 22:04	MEM
Total Dissolved Solids	225	mg/L	12.5		SM2540-C	8/11/21 7:43	8/12/21 14:34	TAS
Total Kjeldahl Nitrogen	0.21	mg/L	0.05		SM4500-Norg-C	8/13/21 10:56	8/13/21 14:10	JMW
Total Nitrogen as N	11.9	mg/L	0.0500		[CALC]	8/13/21 10:56	8/13/21 14:10	JMW
Total Phosphorus as P	0.08	mg/L	0.05		SM4500-P-F	8/13/21 11:01	8/13/21 13:25	JMW

### Metals

Sodium	5.06	mg/L	0.0100		EPA 200.7	8/18/21 8:00	8/18/21 10:18	JMW
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**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Milton Farm

5400 Limestone Rd

**Project Number:** Milton Farm

Wilmington, DE 19808

**Reported:** 08/18/2021 13:57

## Analytical Results

**Sample ID:** 242955 **Sample Start:** 08/04/21 09:50  
**Lab ID:** 2107630-07  
**Matrix:** Ground Water  
**Sample Type:** Grab **Received:** 08/04/21 14:18

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/4/21 16:56	8/5/21 15:39	RD
Enterococcus	>2419.6	#/100 mL	1		Enterolert	8/4/21 14:36	8/5/21 15:43	RD
Total Coliform	ND	#/100 mL	2		SM9222-B	8/4/21 16:58	8/5/21 15:36	RD

### Inorganic

Chloride	68.0	mg/L	2.50		EPA 300.0	8/4/21 22:25	8/4/21 22:25	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/10/21 10:00	8/10/21 10:47	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/4/21 22:25	8/4/21 22:25	MEM
Nitrate as N	11.1	mg/L	1.00		EPA 300.0	8/4/21 22:25	8/4/21 22:25	MEM
Total Dissolved Solids	295	mg/L	12.5		SM2540-C	8/11/21 7:43	8/12/21 14:34	TAS
Total Kjeldahl Nitrogen	0.27	mg/L	0.05		SM4500-Norg-C	8/13/21 10:56	8/13/21 14:10	JMW
Total Nitrogen as N	11.4	mg/L	0.0500		[CALC]	8/13/21 10:56	8/13/21 14:10	JMW
Total Phosphorus as P	0.27	mg/L	0.05		SM4500-P-F	8/13/21 11:01	8/13/21 13:25	JMW

### Metals

Sodium	33.4	mg/L	0.0100		EPA 200.7	8/18/21 8:00	8/18/21 10:21	JMW
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Duffield Associates, Inc.

**Project:** Milton Farm

5400 Limestone Rd

**Project Number:** Milton Farm

Wilmington, DE 19808

**Reported:** 08/18/2021 13:57

## Analytical Results

**Sample ID:** 242956 **Sample Start:** 08/04/21 12:01  
**Lab ID:** 2107630-08  
**Matrix:** Ground Water  
**Sample Type:** Grab **Received:** 08/04/21 14:18

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/4/21 16:56	8/5/21 15:39	RD
Enterococcus	501.2	#/100 mL	1		Enterolert	8/4/21 14:36	8/5/21 15:43	RD
Total Coliform	158	#/100 mL	2		SM9222-B	8/4/21 16:58	8/5/21 15:36	RD

### Inorganic

Chloride	56.7	mg/L	1.50		EPA 300.0	8/4/21 22:47	8/4/21 22:47	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/10/21 10:00	8/10/21 10:47	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/4/21 22:47	8/4/21 22:47	MEM
Nitrate as N	24.6	mg/L	0.60		EPA 300.0	8/4/21 22:47	8/4/21 22:47	MEM
Total Dissolved Solids	378	mg/L	12.5		SM2540-C	8/11/21 7:43	8/12/21 14:34	TAS
Total Kjeldahl Nitrogen	0.24	mg/L	0.05		SM4500-Norg-C	8/13/21 10:56	8/13/21 14:10	JMW
Total Nitrogen as N	24.9	mg/L	0.0500		[CALC]	8/13/21 10:56	8/13/21 14:10	JMW
Total Phosphorus as P	0.18	mg/L	0.05		SM4500-P-F	8/13/21 11:01	8/13/21 13:25	JMW

### Metals

Sodium	33.4	mg/L	0.0100		EPA 200.7	8/18/21 8:00	8/18/21 10:24	JMW
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**ENVIROCORP LABORATORIES INC.**

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
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**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**



Duffield Associates, Inc.

5400 Limestone Rd

Wilmington, DE 19808

**Project:** Milton Farm

**Project Number:** Milton Farm

**Reported:** 08/18/2021 13:57

## Notes and Definitions

Item	Definition
<b>Z</b>	>2419.6
<b>Dry-WT</b>	Sample results reported on a dry weight basis.
<b>ND</b>	Analyte NOT DETECTED at or above the reporting limit.
<b>Reporting Limit</b>	Lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.



2107630

Duffield Associates, Inc.

Milton Farm



**Client Name** Duffield Associates, Inc.  
**Contact** Steven Cahill  
**Address** 5400 Limestone Rd.  
 Wilmington, DE 199808  
**Phone** 302-239-6634  
**Fax** 302-239-8485  
**Email** Scahill@duffnet.com

Containers Received							
Type	Q	Poured off					
Quant	1	@ Lab					
Temperature Upon Receipt							
Type: <u>10</u> @ Lab: <u>10</u> Temperature: <u>10</u>							
Analyses/Method Requested							
		Cl, NO <sub>3</sub> , TKN, TN	NH <sub>3</sub> , TP, TDS	Na	FCMF, TCMF	Enterococcus	

Lab I.D (Lab use only)	Sample Description/Location	Sample Date	Time	Matrix	Field	Please check appropriate box for each test requested						
Milton Farm												
-01	242592	8/4/21	1008	GW			X	X	X	X	X	
					Field Notes							
-02	242593	8/4/21	1030	GW			X	X	X	X	X	
					Field Notes							
-03	242594	8/4/21	1048	GW			X	X	X	X	X	
					Field Notes							
-04	242949	8/4/21	1121	GW			X	X	X	X	X	
					Field Notes							
-05	242950	8/4/21	1140	GW			X	X	X	X	X	
					Field Notes							
-06	242951	8/4/21	1245	GW			X	X	X	X	X	
					Field Notes							
-07	242955	8/4/21	0950	GW			X	X	X	X	X	
					Field Notes							
-08	242956	8/4/21	1201	GW			X	X	X	X	X	
					Field Notes							

Q=Quart (Unpreserved), M=Metals (HNO<sub>3</sub>), N/P=Nutrients (H<sub>2</sub>SO<sub>4</sub>), Bacti=P/A Colilert® (Sodium Thiosulfate), OG=Oil & Grease (HCL)

Sampled by Savannah Date 8/4/21 Time 9am-1326pm

Relinquished by SAS Date 8/4/21 Time 1416

Received by [Signature] Date 8/4 Time 1416

Received by [Signature] Date 8/4 Time 1416

# **ATTACHMENT 3**

## **SUMMARY TABLES OF LABORATORY DATA**



Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242592**

Parameters	May/June 2013	Sept 2013	Dec 2013	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014
Groundwater Elevation (ft)	21.54	22.54	21.38	22.44	22.34	22.34	21.93	21.34	21.09
pH	6	5	5.89	5.73	6.01	6.77	6.5	6.19	6.2
Conductivity (umhos)	567	-	257.9	258.6	283.3	298.1	333.7	300.9	279.2
Temperature (Celsius)	14.4	18.2	14.9	12.7	10.9	11.4	13.3	14.4	15.3
Dissolved Oxygen (Mg/L)	-	-	-	5.97	8.15	1.66	3.54	2.9	4.38
Total Dissolved Solids	378	-	-	253	229	229	284	172	242
Nitrates (Mg/L)	9.4	9.7	14.2	8.33	9.4	9.11	9.28	16.3	15.7
Ammonia Nitrogen	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	-	11	-	8.33	9.4	9.11	9.28	16.3	15.7
Total Phosphorus	-	0.45	-	1.06	0.547	0.789	0.87	0.207	0.856
Chlorides	-	-	-	67.7	69.5	108	88.2	20.9	66.6
Sodium	-	-	-	36.1	33.4	47	43.4	8.68	42.9
Fecal Coliform (col/100 ml)	ND	-	-	<1.8	-	-	<2.0	-	-
Enterococcus (MPN/100 ml)	-	-	-	24.3	-	-	70	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242592**

Parameters	Aug 2014	Sept 2014	Dec 2014	March 2015	June 2015	Aug 2015	Nov 2015	Feb 2016	May 2016
Groundwater Elevation (ft)	20.72	19.82	21.74	22.15	21.15	20.16	19.93	21.75	21.56
pH	6.35	6.81	6.23	6.87	6.88	6.92	5.59	6.54	5.72
Conductivity (umhos)	236.6	173.3	268.1	236.4	255.8	197.7	492	229	498
Temperature (Celsius)	15.1	16.4	14.9	11.2	13.6	15.3	15.97	11.93	12.52
Dissolved Oxygen (Mg/L)	1.56	2.61	5.42	6.17	4.2	4	5.65	2.99	2.73
Total Dissolved Solids	211	167	210	240	235	169	376	197	380
Nitrates (Mg/L)	16.8	13.1	20.7	17.6	15.4	13.2	23.3	5.77	18.6
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-
Total Nitrogen	16.8	13.1	20.7	17.6	15.4	13.2	23.3	5.77	18.6
Total Phosphorus	<0.05	1.48	1.25	0.415	0.534	0.624	0.673	0.563	0.58
Chlorides	46	27.1	67.9	74.4	76.4	54.1	148	58.7	117
Sodium	34	20.8	38.7	35.1	37.4	30.8	35.8	23.6	50.2
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	1.8	<1.8	<1.8	<1.8	-	-
Enterococcus (MPN/100 ml)	1	-	49.6	4.1	27.2	27.5	16	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242592**

Parameters	Aug 2016	Feb 2017	March 2017	May 2017	Aug 2017	Nov 2017	Feb 2018	May 2018	Aug 2018
Groundwater Elevation (ft)	20.76	21.54	21.24	21.58	21.34	20.69	20.89	21.27	20.48
pH	5.94	6.89	6.66	7.16	6.29	6.15	8.03	5.86	5.48
Conductivity (umhos)	503	552	526	493	524	418	536	296	275
Temperature (Celsius)	15.91	13.61	11.18	13.94	17.49	15.22	11.19	14.8	20
Dissolved Oxygen (Mg/L)	4.77	9.9	5.43	-	5.86	4.24	-	-	-
Total Dissolved Solids	325	284	304	325	299	277	382	360	390
Nitrates (Mg/L)	15.7	13.6	16.8	16.9	13.2	14.2	9.88	13.3	14.3
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05
Total Nitrogen	15.7	13.9	16.8	16.9	13.2	14.2	10.1	13.7	14.5
Total Phosphorus	0.743	0.733	0.258	0.332	0.64	0.354	<0.05	1.14	<0.05
Chlorides	102	109	112	145	99.5	109	113	99.2	105
Sodium	48.2	34.3	43.6	44.2	44.8	49.1	62.4	56.5	57.2
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	21.6	5.2	6.3	8.4	529.8	18.3	15.8	7.3	7.5

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242592**

Parameters	Nov 2018	Feb 2019	May 2019	Aug 2019	Nov 2019	Feb 2020	May 2020	Aug 2020	Nov 2020
Groundwater Elevation (ft)	22.84	22.71	22.24	20.34	18.85	20.5	20.69	19.49	22.34
pH	5.52	5.44	6.38	6.15	6.22	6.09	8.01	6.45	6.51
Conductivity (umhos)	256	326	348	436	410	367	441	593	333
Temperature (Celsius)	13.91	13.38	16.24	16.44	14.46	13.69	17.05	19.55	15.31
Dissolved Oxygen (Mg/L)	5.69	6.91	11.01	3.22	10.84	1.93	3.08	4.74	8.67
Total Dissolved Solids	186	240	199	292	272	274	238	404	278
Nitrates (Mg/L)	1.32	9.78	10.9	12.8	13.2	11.5	12.9	21.8	19.9
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	1.52	9.94	11.2	13	13.2	11.6	13.2	22.2	20.1
Total Phosphorus	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	0.16
Chlorides	55.1	68.4	31.1	66.2	71.6	72.9	66.4	119	38
Sodium	34.7	49.1	10.4	28.9	32.1	45.2	21.1	43.1	14.4
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	4	<2
Enterococcus (MPN/100 ml)	9.6	2	NS	12	8.6	9.6	6.2	12.1	36.8

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242592**

<b>Parameters</b>	<b>Feb 2021</b>	<b>May 2021</b>	<b>Aug 2021</b>
<b>Groundwater Elevation (ft)</b>	23.19	22.29	20.48
<b>pH</b>	7.73	5.98	6.92
<b>Conductivity (umhos)</b>	253	457	405
<b>Temperature (Celsius)</b>	12.87	12.76	17.29
<b>Dissolved Oxygen (Mg/L)</b>	0	0.63	0.99
<b>Total Dissolved Solids</b>	212	355	418
<b>Nitrates (Mg/L)</b>	12.2	21.9	21.9
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05
<b>Total Nitrogen</b>	12.3	22.1	22.2
<b>Total Phosphorus</b>	<0.05	0.06	0.08
<b>Chlorides</b>	29	66.2	68
<b>Sodium</b>	9.4	33.5	36.6
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	6.3	24.2	28.8

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**



Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242593**

Parameters	May/June 2013	Sept 2013	Dec 2013	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014
Groundwater Elevation (ft)	17.78	17.79	17.87	18.5	18.46	18.48	18.18	17.44	17.42
pH	5.9	6.7	5.85	5.14	6.57	6.91	5.97	6.8	6.16
Conductivity (umhos)	346	-	556	223.4	210.5	190.6	313.7	437.8	701
Temperature (Celsius)	13.9	18	14.9	12.7	12.3	12.1	12.5	14	15.2
Dissolved Oxygen (Mg/L)	-	-	-	5.97	6.01	3.94	5.76	5.29	5.69
Total Dissolved Solids	266	-	-	253	160	110	499	270	584
Nitrates (Mg/L)	26.4	80	104	30	29.2	21.8	70.7	42.6	84.1
Ammonia Nitrogen	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	-	81	-	30	29.2	21.8	70.7	42.6	84.1
Total Phosphorus	-	ND	-	1.06	0.883	0.114	0.127	0.234	0.216
Chlorides	-	-	-	67.7	22.5	8.87	20.3	12.8	22.6
Sodium	-	-	-	36.1	8.93	6.93	16.4	13.3	22.9
Fecal Coliform (col/100 ml)	ND	-	-	<1.8	-	-	<2.0	-	-
Enterococcus (MPN/100 ml)	-	-	-	24.3	-	-	9	-	-

**Notes:**

**1. Mg/L = milligrams per liter.**

**2. col/100 ml = colonies per 100  
milliliters of water**

**3. MPN/100 ml = most probable  
per 100 milliliters of water.**

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242593**

Parameters	Aug 2014	Sept 2014	Dec 2014	March 2015	June 2015	Aug 2015	Nov 2015	Feb 2016	May 2016
Groundwater Elevation (ft)	17.39	17.01	17.7	18.57	17.65	16.79	17.78	18.2	18
pH	6.19	6.92	6.65	6.68	6.92	6.99	5.42	6.41	6.13
Conductivity (umhos)	874	873	879	149.1	323.7	295.3	1,064	304	474
Temperature (Celsius)	15.1	16.1	15.3	12	13.9	15.3	15.32	13.23	12.95
Dissolved Oxygen (Mg/L)	5.86	5.26	5.43	4.1	4.76	4.21	6.01	3.61	2.81
Total Dissolved Solids	700	616	804	167	356	301	635	325	233
Nitrates (Mg/L)	96.3	99.3	157	19.5	49.2	40.1	122	39.8	33
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	96.3	99.3	157	19.5	49.2	40.1	122	39.8	33
Total Phosphorus	<0.05	<0.05	0.112	0.217	0.795	0.0644	0.102	0.195	0.0524
Chlorides	27.5	24.3	30.8	8.03	18.1	17.3	33.6	12.8	34.5
Sodium	34.4	31.3	26	6.96	16.3	18.2	22	10	12.1
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	<1.8	<1.8	<1.8	<1.8	-	<1.8
Enterococcus (MPN/100 ml)	1	-	5.1	14.8	8.5	5.2	3.1	-	2

**Notes:**

**1. Mg/L = milligrams per liter.**

**2. col/100 ml = colonies per 100 milliliters of water**

**3. MPN/100 ml = most probable per 100 milliliters of water.**

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242593**

Parameters	Aug 2016	Nov 2016	Feb 2017	March 2017	May 2017	Aug 2017	Nov 2017	Feb 2018	May 2018
Groundwater Elevation (ft)	16.94	18.68	17.95	17.76	17.89	17.99	17.58	17.66	17.8
pH	5.97	5.96	6.67	6.32	6.67	6.26	6.74	7.25	5.7
Conductivity (umhos)	600	301	384	434	384	524	501	719	221
Temperature (Celsius)	15.88	16.73	14.07	12.33	14.07	17.99	16.41	12.87	15
Dissolved Oxygen (Mg/L)	5.99	7.45	8.67	4.98	8.67	5.89	4.33	-	-
Total Dissolved Solids	315	222	425	417	357	588	341	798	230
Nitrates (Mg/L)	42.9	23.3	70.8	66.2	54.1	79.9	50.6	53.7	18.1
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Total Nitrogen	42.9	23.3	70.8	66.2	54.1	79.9	50.6	54.3	18.5
Total Phosphorus	0.088	0.15	0.0954	0.116	0.0651	0.066	0.102	<0.05	<0.05
Chlorides	14.9	10.5	25.9	22.7	27.2	33.8	20.7	37.2	14.2
Sodium	15.8	8.21	12.5	12.9	15	21.3	17.9	26.6	15.9
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<1.8	<1.8	2	<1.8	<2.0	<2.0
Enterococcus (MPN/100 ml)	3.1	3.1	3.1	3.1	<1.8	116.9	4.1	1	10.8

**Notes:**

**1. Mg/L = milligrams per liter.**

**2. col/100 ml = colonies per 100  
milliliters of water**

**3. MPN/100 ml = most probable  
per 100 milliliters of water.**

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242593**

Parameters	Aug 2018	Nov 2018	Feb 2019	May 2019	Aug 2019	Nov 2019	Feb 2020	May 2020	Aug 2020
Groundwater Elevation (ft)	17.24	19.05	18.77	18.37	17.22	16.43	17.46	17.57	16.87
pH	5.5	4.78	5.37	7.27	6.18	5.94	5.72	7.88	6.91
Conductivity (umhos)	292	192	174	218	336	504	437	394	508
Temperature (Celsius)	20	15.02	14.99	16.03	19.73	13.7	14.62	15.51	20.58
Dissolved Oxygen (Mg/L)	-	5.55	6.7	11.56	1.35	11.29	1.54	2.62	2.68
Total Dissolved Solids	444	160	134	202	416	348	354	284	342
Nitrates (Mg/L)	31.3	11.8	8.95	15	28.4	29.2	30.6	21.9	27.8
Ammonia Nitrogen	0.18	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	31.5	12.2	9.26	15.4	28.9	29.2	30.9	22.3	28.4
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorides	24.6	6.15	5.19	4.85	15.5	14.6	14.3	12.7	16.9
Sodium	25	14	7.6	7	16.3	17.6	22.4	6.23	13.8
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	>160
Enterococcus (MPN/100 ml)	7.5	5.2	6.3	NS	NS	15.8	6.3	6.3	>2,419.6

**Notes:**

**1. Mg/L = milligrams per liter.**

**2. col/100 ml = colonies per 100 milliliters of water**

**3. MPN/100 ml = most probable per 100 milliliters of water.**

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242593**

<b>Parameters</b>	<b>Nov 2020</b>	<b>Feb 2021</b>	<b>May 2021</b>	<b>Aug 2021</b>
<b>Groundwater Elevation (ft)</b>	18.7	18.97	18.44	17.26
<b>pH</b>	7.02	8.11	6.33	5.67
<b>Conductivity (umhos)</b>	264	277	259	333
<b>Temperature (Celsius)</b>	15.37	13.75	14.65	17.14
<b>Dissolved Oxygen (Mg/L)</b>	6.45	0.38	0.71	0.87
<b>Total Dissolved Solids</b>	262	268	218	468
<b>Nitrates (Mg/L)</b>	22.4	22.5	11.6	28.6
<b>Ammonia Nitrogen</b>	<0.05	<0.05	0.06	<0.05
<b>Total Nitrogen</b>	22.7	22.9	12.2	29.1
<b>Total Phosphorus</b>	0.16	0.13	1.09	0.07
<b>Chlorides</b>	8.98	20.1	12.2	25.4
<b>Sodium</b>	6.72	3.33	6.03	8.51
<b>Fecal Coliform (col/100 ml)</b>	<2	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	110.6	98.3	>2,419.6	38.3

**Notes:**

**1. Mg/L = milligrams per liter.**

**2. col/100 ml = colonies per 100 milliliters of water**

**3. MPN/100 ml = most probable per 100 milliliters of water.**



Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242594**

Parameters	May/ June 2013	Sept 2013	Dec 2013	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014
Groundwater Elevation (ft)	19.48	19.3	19.03	20.18	19.96	20.02	19.55	18.9	18.6
pH	6.6	5.1	6.47	5.06	5.99	6.02	5.94	5.97	5.88
Conductivity (umhos)	1,640	-	1,091	1,328	1,304	1,392	1,432	1,478	1,467
Temperature (Celsius)	15.1	18.5	15.7	12.3	11.4	11.5	12.2	13.7	14.6
Dissolved Oxygen (Mg/L)	-	-	-	4.38	9.76	6.9	5.81	6.21	6.75
Total Dissolved Solids	1,664	-	-	1,560	1,540	1,790	1,940	1,820	1,850
Nitrates (Mg/L)	193	165	224	297	270	318	342	296	336
Ammonia Nitrogen	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	-	166	-	297	270	318	342	296	336
Total Phosphorus	-	0.6	-	1.15	1.18	1.13	1.35	1.01	0.648
Chlorides	-	-	-	68.6	68.1	67.1	63.6	61.9	63.9
Sodium	-	-	-	97.3	71.9	67.4	61.7	63.7	58.3
Fecal Coliform (col/100 ml)	ND	-	-	<1.8	-	-	<2.0	-	-
Enterococcus (MPN/100 ml)	-	-	-	28.8	-	-	9	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242594**

Parameters	Aug 2014	Sept 2014	Dec 2014	March 2015	June 2015	Aug 2015	Nov 2015	Feb 2016	May 2016
Groundwater Elevation (ft)	18.36	17.81	18.47	19.78	18.79	17.92	17.08	19.37	19.16
pH	5.9	6.09	5.97	6.04	6.15	6.12	5.42	6.1	5.86
Conductivity (umhos)	1,493	1,413	1,318	1,109	905	876	1,064	536	812
Temperature (Celsius)	15.1	15.1	14.7	11.3	13.5	14.7	16.27	11.88	12.19
Dissolved Oxygen (Mg/L)	6.02	5.65	6.21	7.01	6.16	6.26	6.01	5.17	3.01
Total Dissolved Solids	1,850	2,430	1,400	1,260	1,240	1,080	973	684	322
Nitrates (Mg/L)	306	333	322	223	133	169	160	91.3	64.4
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	306	333	322	223	133	169	160	91.3	64.4
Total Phosphorus	0.157	0.149	0.37	1.09	0.324	0.215	0.173	0.686	<0.05
Chlorides	65.5	65.7	65.7	64.8	81.9	78.6	70.6	63.5	29
Sodium	50	43.5	33.5	49.3	43.7	37.2	30.8	39.7	12.2
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	<1.8	<1.8	<1.8	<1.8	-	<1.8
Enterococcus (MPN/100 ml)	3.1	-	1	47.3	4.1	<1	<1	-	<1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242594**

Parameters	Aug 2016	Nov 2016	Feb 2017	March 2017	May 2017	Aug 2017	Nov 2017	Feb 2018	May 2018
Groundwater Elevation (ft)	18.22	20.15	19.12	18.89	19.01	19.08	18.45	18.31	18.9
pH	6.1	6.12	6.57	6.61	6.57	6.49	6	7.33	5.76
Conductivity (umhos)	896	972	884	879	884	1,075	1,128	1,400	388
Temperature (Celsius)	15.14	16.24	13.11	11.64	13.11	17.92	15.86	13.07	14.3
Dissolved Oxygen (Mg/L)	6.11	8.28	8.6	5.08	8.6	5.92	3.97	-	-
Total Dissolved Solids	889	645	586	536	578	813	842	1,470	466
Nitrates (Mg/L)	95.3	70.3	59.7	58.5	56.6	92.3	128	121	15.3
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Total Nitrogen	95.3	70.3	59.7	58.5	56.6	92.3	128	122	15.9
Total Phosphorus	0.148	0.319	0.318	0.219	0.164	0.287	0.246	0.05	<0.05
Chlorides	66.5	59.2	44.7	41.4	47.7	45.6	55.9	81.9	24.6
Sodium	32.6	35.9	34.8	35.5	34.5	39.8	39	48.8	37.5
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<1.8	<1.8	2	<1.8	<2.0	<2.0
Enterococcus (MPN/100 ml)	119.8	26.5	16.8	13.4	10.9	81.3	<1	4	15.8

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242594**

Parameters	Aug 2018	Nov 2018	Feb 2019	May 2019	Nov 2019	Feb 2020	May 2020	Aug 2020	Nov 2020
Groundwater Elevation (ft)	18.22	21.1	20.49	19.79	16.96	18.08	18.43	17.46	20.05
pH	5.86	5.05	5.1	6.43	6.08	5.9	7.39	6.41	6.58
Conductivity (umhos)	339	561	545	448	477	543	389	471	421
Temperature (Celsius)	19.9	13.24	15.84	22.98	13.97	14.57	15.48	17.67	16.43
Dissolved Oxygen (Mg/L)	-	5.46	5.7	7.13	11.59	1.64	2.12	2.84	4.82
Total Dissolved Solids	528	430	394	374	368	420	256	380	420
Nitrates (Mg/L)	16	15.2	15.5	14	22.6	30	17.9	23.1	29.1
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	16.7	15.9	16	14.5	22.6	30.3	18.3	23.7	29.4
Total Phosphorus	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	0.12	0.05	0.19
Chlorides	22.3	15.8	14.7	9.99	13.9	14.9	9.25	14.3	7.52
Sodium	36.3	43.1	39.7	29.3	24.5	30.5	14.8	21.7	7.02
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	14.8	16	>160	NS	8.5	16.6	436	5.2	50.4

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242594**

<b>Parameters</b>	<b>Feb 2021</b>	<b>May 2021</b>	<b>Aug 2021</b>
<b>Groundwater Elevation (ft)</b>	20.43	19.55	18
<b>pH</b>	8.07	6.78	6.65
<b>Conductivity (umhos)</b>	237	317	409
<b>Temperature (Celsius)</b>	13.38	12.88	15.58
<b>Dissolved Oxygen (Mg/L)</b>	0	0.64	0.86
<b>Total Dissolved Solids</b>	352	305	445
<b>Nitrates (Mg/L)</b>	24.7	13.5	30.4
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05
<b>Total Nitrogen</b>	25.1	14.1	30.9
<b>Total Phosphorus</b>	0.19	1.02	0.5
<b>Chlorides</b>	6.71	3.79	12.2
<b>Sodium</b>	16.2	12.6	11.5
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	67.6	579.4	42.2

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**



Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242949**

<b>Parameters</b>	<b>May/June 2013</b>	<b>Sept 2013</b>	<b>Dec 2013</b>	<b>Feb 2014</b>	<b>March 2014</b>	<b>April 2014</b>	<b>May 2014</b>	<b>June 2014</b>	<b>July 2014</b>
<b>Groundwater Elevation (ft)</b>	17.32	17.39	17.19	18.02	18.01	18.03	17.6	17.02	16.82
<b>pH</b>	4.9	4.5	6.11	6	6.32	6.95	6.29	6.65	6.67
<b>Conductivity (umhos)</b>	461	-	333.1	195.8	178.3	165.2	198.9	208.1	275.6
<b>Temperature (Celsius)</b>	16.3	18.7	15.4	12.7	11.2	11.4	13.1	14.5	16.3
<b>Dissolved Oxygen (Mg/L)</b>	-	-	-	3.17	5.96	4.2	3.98	4.07	4.82
<b>Total Dissolved Solids</b>	440	-	-	239	189	110	243	261	344
<b>Nitrates (Mg/L)</b>	38.1	53.2	57.9	23.9	15.9	8.06	18.8	18.1	35.5
<b>Ammonia Nitrogen</b>	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
<b>Total Nitrogen</b>	-	54.2	-	23.9	15.9	8.06	18.8	18.1	35.5
<b>Total Phosphorus</b>	-	ND	-	0.217	0.107	<0.05	0.109	<0.05	0.173
<b>Chlorides</b>	-	-	-	11	9.41	7.76	12.6	13.3	19.3
<b>Sodium</b>	-	-	-	8.01	8.31	6.93	9.32	8.77	21.5
<b>Fecal Coliform (col/100 ml)</b>	ND	-	-	<1.8	-	-	<2.0	-	-
<b>Enterococcus (MPN/100 ml)</b>	-	-	-	10.8	-	-	2	-	-

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242949**

Parameters	Aug 2014	Sept 2014	Dec 2014	March 2015	June 2015	Aug 2015	Nov 2015	Feb 2016	May 2016
Groundwater Elevation (ft)	16.62	16.22	16.93	18.07	16.9	16.17	16.08	17.59	17.38
pH	6.7	6.85	6.72	6.77	6.83	6.88	6.68	6.71	6.24
Conductivity (umhos)	273.2	290.7	220.9	188.9	287.7	202.8	464	169	177
Temperature (Celsius)	16.1	17.1	14.9	10.6	14.1	16.1	16.71	12	12.77
Dissolved Oxygen (Mg/L)	4.67	3.81	4.37	4.3	3.41	3.47	4.72	4.13	3.01
Total Dissolved Solids	348	250	172	227	408	200	298	164	122
Nitrates (Mg/L)	30.6	35.7	27.4	23	31.6	23	46.4	7.04	6.32
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	30.6	35.7	27.4	23	31.6	23	46.4	7.36	6.32
Total Phosphorus	<0.05	0.129	0.12	0.0768	0.172	0.189	0.0619	0.123	0.138
Chlorides	17.8	17.9	14.6	14.1	16.8	12.9	21.6	7.3	6.86
Sodium	11.3	11.3	8.22	7.99	12.2	10.3	12.1	7.18	7.82
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	<1.8	7.8	<1.8	<1.8	-	<1.8
Enterococcus (MPN/100 ml)	7.4	-	16.3	1	17.3	4.1	<1	-	4.1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242949**

Parameters	Aug 2016	Nov 2016	Feb 2017	May 2017	Aug 2017	Nov 2017	Feb 2018	May 2018	Aug 2018
Groundwater Elevation (ft)	16.29	17.99	17.17	17.11	17.23	16.69	17.39	17.01	16.34
pH	6.19	6.48	6.79	5.63	6.53	6.4	7.91	6.35	6.04
Conductivity (umhos)	207	198	157	113	110	176	182	98	115
Temperature (Celsius)	16.3	16.97	13.72	14.6	20.09	16.86	11.52	15.7	21.6
Dissolved Oxygen (Mg/L)	4.29	7.65	6.7	-	5.19	4.03	-	-	-
Total Dissolved Solids	115	142	88	138	78	8.2	96	98	88
Nitrates (Mg/L)	5.49	7.53	2.93	4.56	2.46	2	2.1	2.34	1.98
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05
Total Nitrogen	5.49	7.53	2.93	4.56	2.46	2	2.24	2.56	2.13
Total Phosphorus	0.0561	<0.05	<0.05	<0.05	<0.05	0.719	<0.05	<0.05	<0.05
Chlorides	5.78	6.23	4	<10	3.75	3.21	6.08	7.3	3.7
Sodium	6.74	6.9	5.97	6.2	6.15	4.4	45.8	5.7	5
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	2	2	7.8	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	24.3	2	1	1	1,203.30	1,732.90	<1.0	<1.0	2

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242949**

Parameters	Nov 2018	Feb 2019	May 2019	Aug 2019	Nov 2019	Feb 2020	May 2020	Aug 2020	Nov 2020
Groundwater Elevation (ft)	18.78	18.32	17.62	16.47	15.51	16.61	16.72	16	18.02
pH	5.55	5.96	6.62	6.3	6.55	5.94	7.92	7.16	7.23
Conductivity (umhos)	146	135	133	165	204	141	171	204	226
Temperature (Celsius)	12.58	13.55	15.09	16.3	15.36	14.83	14.34	19.1	14.56
Dissolved Oxygen (Mg/L)	4.82	5.62	8.94	2.7	10.58	1.71	2.28	3.17	3.29
Total Dissolved Solids	96	92	138	176	156	106	112	158	198
Nitrates (Mg/L)	3.6	2.51	5.92	9.78	10	5.31	7.93	10.3	12.9
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	3.98	2.65	6.14	10	10	5.41	8.15	10.7	13.2
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
Chlorides	4.37	5.47	5.97	7.74	9.17	6.73	12.3	10.3	18.5
Sodium	5.9	5.7	6.5	5.46	8.68	8.17	6.61	6.6	3.7
Fecal Coliform (col/100 ml)	<2.0	<2.0	2	<2	<2	<2.0	<2.0	<2	<2
Enterococcus (MPN/100 ml)	1	30	NS	10.7	8	2	1	11.9	290.9

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242949**

<b>Parameters</b>	<b>Feb 2021</b>	<b>May 2021</b>	<b>Aug 2021</b>
<b>Groundwater Elevation (ft)</b>	18.42	17.72	16.2
<b>pH</b>	8.39	6.89	6.75
<b>Conductivity (umhos)</b>	221	196	229
<b>Temperature (Celsius)</b>	12.36	13.82	16.6
<b>Dissolved Oxygen (Mg/L)</b>	0.1	0.56	0.81
<b>Total Dissolved Solids</b>	228	228	250
<b>Nitrates (Mg/L)</b>	13	10.5	9.62
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05
<b>Total Nitrogen</b>	13.3	10.8	9.93
<b>Total Phosphorus</b>	<0.05	0.24	0.07
<b>Chlorides</b>	14.1	14.8	23.8
<b>Sodium</b>	4.1	6.47	6.03
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	1	135.4	19.9

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**



Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242950**

Parameters	May/ June 2013	Sept 2013	Dec 2013	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014
Groundwater Elevation (ft)	16.56	16.78	16.4	17.5	17.65	17.82	17.28	16.38	16.02
pH	5.6	5.2	5.08	4.68	6.13	6.76	6.55	6.55	6.59
Conductivity (umhos)	210	-	168.4	192.1	185.6	162.8	184.2	189.8	221
Temperature (Celsius)	15.1	18.8	15.3	12.2	10.3	11.2	12.2	14.3	15.6
Dissolved Oxygen (Mg/L)	-	-	-	2.61	6.04	4.88	3.57	4.57	2.77
Total Dissolved Solids	122	-	-	202	165	118	144	141	156
Nitrates (Mg/L)	8.7	15.6	23	19.2	16.7	18.8	14	11.4	19.4
Ammonia Nitrogen	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	-	16.6	-	19.2	16.7	18.8	14	11.4	19.4
Total Phosphorus	-	ND	-	0.157	0.0831	<0.05	<0.05	<0.05	0.074
Chlorides	-	-	-	9.69	8.15	8.61	8.55	7.66	11.1
Sodium	-	-	-	6.43	5.75	5.25	5.04	5.71	6.85
Fecal Coliform (col/100 ml)	ND	-	-	<1.8	-	-	<2.0	-	-
Enterococcus (MPN/100 ml)	-	-	-	28.1	-	-	2	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242950**

Parameters	Aug 2014	Sept 2014	Dec 2014	March 2015	June 2015	Aug 2015	Nov 2015	Feb 2016	May 2016
Groundwater Elevation (ft)	15.73	15.19	15.39	17.18	16.12	15.06	14.81	16.67	16.56
pH	6.58	6.9	6.88	6.97	6.95	6.98	5.58	6.32	5.97
Conductivity (umhos)	217.9	211.7	172.8	135.4	126.9	133.6	199	134	127
Temperature (Celsius)	16.3	17.1	14.8	10.4	14.2	16.5	17.06	11.36	12.84
Dissolved Oxygen (Mg/L)	4.78	3.81	3.94	4.31	3.5	2.76	3.98	5.62	3.42
Total Dissolved Solids	199	197	103	138	212	127	114	115	120
Nitrates (Mg/L)	23.3	25.5	18.6	9.57	7.59	9.2	9.51	4.72	3.18
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Total Nitrogen	23.3	25.5	18.6	9.57	7.59	9.2	9.51	-	3.18
Total Phosphorus	<0.05	<0.05	<0.05	0.0776	0.0661	<0.05	<0.05	-	<0.05
Chlorides	12.1	14.5	12.4	8.77	8.05	8.03	7.22	5.16	4.13
Sodium	6.73	6.3	5.27	4.29	3.89	4.51	3.72	-	3.01
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	<1.8	2	<1.8	<1.8	-	<1.8
Enterococcus (MPN/100 ml)	21.1	-	3.1	13.2	6.2	1	<1	-	1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242950**

Parameters	Aug 2016	Nov 2016	Feb 2017	May 2017	Aug 2017	Nov 2017	Feb 2018	May 2018	Aug 2018
Groundwater Elevation (ft)	15.34	17.79	16.27	16.23	16.46	15.67	15.57	16.44	15.52
pH	6.26	5.94	6.31	5.42	5.96	6.21	7.78	6.12	5.49
Conductivity (umhos)	163	187	167	106	152	147	154	88	103
Temperature (Celsius)	17.5	17.57	13.44	14.6	19.3	17.15	12.21	16.1	22
Dissolved Oxygen (Mg/L)	4.93	8.85	8.1	-	5.42	4.21	-	-	-
Total Dissolved Solids	103	196	87	98	80	53	98	82	126
Nitrates (Mg/L)	4.48	4.84	5.07	4.6	5.14	3.17	2.63	2.15	3.11
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05
Total Nitrogen	4.48	4.84	5.28	4.6	5.14	3.17	2.75	2.36	3.27
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorides	4.51	4.37	4.25	<10	4.26	3.41	6.23	7.3	4.7
Sodium	3.52	3.58	3.51	2.82	3.51	2.91	2.9	2.8	3.5
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<1.8	13	<1.8	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	29.5	9.7	9.7	6.3	32.9	2	1	1	6.3

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242950**

Parameters	Nov 2018	Feb 2019	May 2019	Aug 2019	Nov 2019	Feb 2020	May 2020	Aug 2020	Nov 2020
Groundwater Elevation (ft)	18.41	18.44	17.43	15.18	14.21	15.04	15.66	14.93	17.48
pH	5.23	5.82	6.49	5.27	6.56	6.19	7.5	6.88	7.07
Conductivity (umhos)	124	124	106	114	134	123	108	59	142
Temperature (Celsius)	13.6	13.18	23.02	19.41	15.82	14.62	15.58	32.32	15.58
Dissolved Oxygen (Mg/L)	5.22	6.29	7.51	1.55	10.23	1.53	2.1	5.41	3.44
Total Dissolved Solids	106	82	112	112	76	102	56	92	150
Nitrates (Mg/L)	2.99	3.05	2.77	1.68	5.32	3.76	5.88	7.2	7.44
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	<3.04	3.26	3	1.88	5.32	3.76	6.08	7.49	7.63
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13
Chlorides	4	5.01	2.99	2.74	4.66	3.99	7.6	7.98	9.73
Sodium	4.7	4.8	3.5	2.58	3.34	3.59	1.93	2.79	4.03
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2	<2.0
Enterococcus (MPN/100 ml)	2	122	NS	131.4	18.5	1	71.6	28.1	93.3

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242950**

<b>Parameters</b>	<b>Feb 2021</b>	<b>May 2021</b>	<b>Aug 2021</b>
<b>Groundwater Elevation (ft)</b>	18.51	17.81	15.43
<b>pH</b>	8.46	7.26	6.54
<b>Conductivity (umhos)</b>	160	136	196
<b>Temperature (Celsius)</b>	13.38	13.61	17.54
<b>Dissolved Oxygen (Mg/L)</b>	0	0.68	0.75
<b>Total Dissolved Solids</b>	162	152	295
<b>Nitrates (Mg/L)</b>	10.2	6.53	19.3
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05
<b>Total Nitrogen</b>	10.3	6.69	19.5
<b>Total Phosphorus</b>	<0.05	<0.05	0.05
<b>Chlorides</b>	10.8	9.31	25.9
<b>Sodium</b>	2.79	4.41	6.06
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	20.9	30.9	83.9

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**



Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242951**

<b>Parameters</b>	<b>May/June 2013</b>	<b>Sept 2013</b>	<b>Dec 2013</b>	<b>Feb 2014</b>	<b>March 2014</b>	<b>April 2014</b>	<b>May 2014</b>	<b>June 2014</b>	<b>July 2014</b>
<b>Groundwater Elevation (ft)</b>	19.69	19.95	19.76	21.09	21.29	21.48	20.82	19.98	19.48
<b>pH</b>	6	6	6.09	5.09	6.51	6.59	6.32	6.07	6.12
<b>Conductivity (umhos)</b>	209	-	166.6	142	128.9	160	188.9	169	184.8
<b>Temperature (Celsius)</b>	13.5	15.9	14.5	12.4	10.8	10.5	12	12.5	13.6
<b>Dissolved Oxygen (Mg/L)</b>	-	-	-	3.02	5.07	4.28	5.16	5.77	5.59
<b>Total Dissolved Solids</b>	134	-	-	170	131	123	167	161	147
<b>Nitrates (Mg/L)</b>	9	21.5	17.2	9.47	6.55	16.5	21.6	14.9	14.2
<b>Ammonia Nitrogen</b>	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
<b>Total Nitrogen</b>	-	22.5	-	9.47	6.55	16.5	21.6	14.9	14.2
<b>Total Phosphorus</b>	-	ND	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>Chlorides</b>	-	-	-	11.5	10.7	17.8	22.6	20.8	14.9
<b>Sodium</b>	-	-	-	5.42	6.81	8.45	9.13	8.07	6.79
<b>Fecal Coliform (col/100 ml)</b>	ND	-	-	<1.8	-	-	<2.0	-	-
<b>Enterococcus (MPN/100 ml)</b>	-	-	-	2	-	-	2	-	-

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242951**

Parameters	Aug 2014	Sept 2014	Dec 2014	March 2015	June 2015	Aug 2015	Nov 2015	Feb 2016	May 2016
Groundwater Elevation (ft)	18.9	18.06	18.36	20.55	19.59	18.37	18.02	20.23	19.92
pH	6.17	6.44	6.19	6.27	6.33	6.61	6.02	6.8	5.89
Conductivity (umhos)	152	222.5	274.3	208.6	110.3	169.9	461	247	220
Temperature (Celsius)	13.1	13.7	13.3	11.1	12.4	13.8	14.49	11.16	11.7
Dissolved Oxygen (Mg/L)	4.81	5.06	1.8	5.58	1.65	4.16	4.4	2.75	3.42
Total Dissolved Solids	179	145	179	130	198	284	277	151	157
Nitrates (Mg/L)	16.4	25.4	40.1	31.1	16.7	38.8	35.4	22.2	15
Ammonia Nitrogen	<0.02	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-
Total Nitrogen	16.4	25.4	40.1	31.1	16.7	38.8	51.8	22.2	15
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05
Chlorides	15.4	18.5	19.2	18.8	21.2	24.6	24.7	16.5	18.3
Sodium	7	6.91	7.05	7.11	7.16	8.82	8.58	6.73	6.22
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	<1.8	1.8	<1.8	<1.8	-	-
Enterococcus (MPN/100 ml)	1	-	<1	1	1	1	<1	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242951**

Parameters	Aug 2016	Nov 2016	Feb 2017	May 2017	Aug 2017	Nov 2017	Feb 2018	May 2018	Aug 2018
Groundwater Elevation (ft)	18.99	21.44	19.86	19.88	19.67	18.84	18.41	19.81	18.91
pH	6.42	6.78	6.71	8.18	6.35	6.96	8.05	5.85	6.13
Conductivity (umhos)	397	510	240	225	283	283	230	135	177
Temperature (Celsius)	13.73	13.81	11.79	12.43	17.06	13.55	11.81	13.3	17.9
Dissolved Oxygen (Mg/L)	4.01	8.8	9.52	-	4.74	6.09	-	-	-
Total Dissolved Solids	204	243	119	124	281	146	164	118	188
Nitrates (Mg/L)	31.2	26.7	9.94	3.67	35.7	24.9	9.25	3.73	8.5
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05
Total Nitrogen	31.2	26.7	9.94	3.67	35.7	24.9	9.41	3.91	10
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorides	21.8	25.9	19.3	18	22.3	17.8	16.1	15.5	14.5
Sodium	6.82	12.4	6.17	6.52	6.13	6.13	4.2	5.1	4.6
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	2	2	1	<1	12.1	<1	1	<1.0	5.2

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242951**

Parameters	Nov 2018	Feb 2019	May 2019	Aug 2019	Nov 2019	Feb 2020	May 2020	Aug 2020	Nov 2020
Groundwater Elevation (ft)	21.58	22.2	21.21	18.86	17.17	17.93	18.81	17.83	20.71
pH	5.06	6.39	7.24	6.41	7.25	6.64	7.67	7.29	7.1
Conductivity (umhos)	282	242	145	214	195	197	155	153	220
Temperature (Celsius)	12.38	12.61	17.36	16.1	12.37	14.29	13.97	16.49	13.48
Dissolved Oxygen (Mg/L)	4.75	6.52	8.85	8.85	11.21	2.81	2.83	3.68	4.02
Total Dissolved Solids	218	154	152	159	142	154	92	138	208
Nitrates (Mg/L)	6.6	0.42	0.317	1.38	5.28	4.66	2.27	2.08	2.86
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	6.82	0.53	0.477	1.62	5.28	4.75	2.46	2.54	3.08
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.15
Chlorides	14.8	16.4	5.92	6.48	10.6	8.99	8.01	6.56	9.54
Sodium	17.4	18.1	5.2	3.4	7.98	5.92	2.38	3.12	5.7
Fecal Coliform (col/100 ml)	<2.0	<2.0	8	<2	<2	<2.0	<2.0	<2	<2
Enterococcus (MPN/100 ml)	1	1	NS	4.1	<2	6.3	2	7.2	28.1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242951**

<b>Parameters</b>	<b>Feb 2021</b>	<b>May 2021</b>	<b>July 2021</b>
<b>Groundwater Elevation (ft)</b>	22.26	21.79	18.76
<b>pH</b>	8.27	8.19	6.68
<b>Conductivity (umhos)</b>	189	180	246
<b>Temperature (Celsius)</b>	12.86	12.57	14.94
<b>Dissolved Oxygen (Mg/L)</b>	1.31	0.82	0.83
<b>Total Dissolved Solids</b>	198	150	225
<b>Nitrates (Mg/L)</b>	0.32	0.57	11.7
<b>Ammonia Nitrogen</b>	0.44	<0.05	<0.05
<b>Total Nitrogen</b>	4.75	0.652	11.9
<b>Total Phosphorus</b>	<0.05	0.11	0.08
<b>Chlorides</b>	11.9	21.9	26.6
<b>Sodium</b>	5.55	6.35	5.06
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	13.4	980.4	30.1

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**



Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242952**

Parameters	May/June 2013	Sept 2013	Dec 2013	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014
Groundwater Elevation (ft)	17.8	15.22	17.78	18.98	19.24	19.44	18.83	18.12	17.61
pH	6	5.6	6.04	5.62	6.05	6.97	6.84	6.07	6.1
Conductivity (umhos)	231	-	153.4	144.7	143.4	150.2	152.4	169	160.2
Temperature (Celsius)	14.1	17.4	15	12.4	11.2	11.2	11.9	12.5	14.4
Dissolved Oxygen (Mg/L)	-	-	-	1.61	6.32	3.93	4.28	5.77	2.87
Total Dissolved Solids	174	-	-	168	145	297	177	161	146
Nitrates (Mg/L)	10.2	10.2	13.9	18.6	16.6	19.1	17.9	14.9	17.9
Ammonia Nitrogen	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	-	11.2	-	19	16.6	19.1	17.9	14.9	17.9
Total Phosphorus	-	0.12	-	0.803	0.369	0.317	0.268	<0.05	0.39
Chlorides	-	-	-	22.4	22.5	21.6	22.1	20.8	20.9
Sodium	-	-	-	10.8	9.53	9.46	8.9	8.07	9.27
Fecal Coliform (col/100 ml)	2	-	-	<1.8	-	-	<2.0	-	-
Enterococcus (MPN/100 ml)	-	-	-	579.4	-	-	54	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242952**

Parameters	Aug 2014	Sept 2014	Nov 2014	Jan 2015	March 2015	May 2015	July 2015	Sept 2015	Nov 2015
Groundwater Elevation (ft)	17.06	16.32	15.92	16.76	18.66	18.14	17.01	16.53	15.95
pH	6.08	6.74	6.86	6.38	6.57	6.59	6.61	6.64	5.41
Conductivity (umhos)	168.5	179.9	186.1	165	161.8	149.1	159.2	153.9	223
Temperature (Celsius)	15	15.2	15.4	13.1	11.3	11.5	13.8	15.6	15.61
Dissolved Oxygen (Mg/L)	4.74	4.43	3.89	4.95	5.09	4.46	3.84	3.3	4.51
Total Dissolved Solids	193	147	176	213	160	142	146	213	182
Nitrates (Mg/L)	22.5	21.7	30.8	23.8	24.7	18.3	20.8	20.3	18.8
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	22.5	21.7	30.8	23.8	24.7	18.3	20.8	20.3	18.8
Total Phosphorus	<0.05	0.198	0.38	0.258	0.409	0.32	0.621	0.287	0.259
Chlorides	18.3	25.1	17.7	16	15.4	21.1	16.3	17	17.2
Sodium	8.8	9.86	8.94	7.11	8.46	8.91	9.74	9.35	8.49
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	-	<1.8	-	-	<1.8	<1.8
Enterococcus (MPN/100 ml)	<1	-	<1	-	27.8	-	-	45.7	24.3

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242952**

Parameters	Jan 2016	March 2016	May 2016	July 2016	Sept 2016	Nov 2016	Jan 2017	May 2017	July 2017
Groundwater Elevation (ft)	16.79	18.52	17.82	17.86	16.34	19.46	17.78	17.6	17.19
pH	6.75	6.17	5.78	5.76	5.18	6.33	7.36	7.36	6.64
Conductivity (umhos)	207	186	677	214	181	214	201	201	212
Temperature (Celsius)	13.27	12.77	12.26	16.29	16.29	15.53	12.69	12.69	17.85
Dissolved Oxygen (Mg/L)	3.78	4.17	2.28	4.2	9.4	8.13	9.07	9.07	5.25
Total Dissolved Solids	150	365	142	167	198	152	96	121	170
Nitrates (Mg/L)	25.1	20.1	14.7	16.1	14.6	13.8	9.21	14.3	15.5
Ammonia Nitrogen	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	25.1	20.1	14.7	16.1	14.6	13.8	9.21	14.3	15.5
Total Phosphorus	0.201	0.737	0.315	0.383	0.282	0.335	0.194	0.197	0.457
Chlorides	17.4	18.1	17.7	16.4	15.9	18.1	17.9	28.8	18.3
Sodium	9.84	9.33	8.36	8.01	8.18	7.86	8.77	9.92	7.64
Fecal Coliform (col/100 ml)	<1.8	<1.8	-	<1.8	<1.8	-	<1.8	<1.8	<1.8
Enterococcus (MPN/100 ml)	29.2	104.3	-	290.9	235.9	-	686.7	9.6	70.7

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242952**

Parameters	Sept 2017	Nov 2017	Jan 2018	March 2018	May 2018	Sept 2018	Nov 2018	Jan 2019	March 2019
Groundwater Elevation (ft)	17.49	16.69	16.35	17.45	17.75	16.87	19.71	20.17	20.46
pH	5.87	6.43	6.56	6.11	5.8	5.61	5.16	5.87	6.41
Conductivity (umhos)	240	238	226	217	177	163	208	205	286
Temperature (Celsius)	18.67	14.48	12.76	13.8	14.4	22	14.83	12.67	9.82
Dissolved Oxygen (Mg/L)	-	4.2	4.61	-	-	-	4.87	5.73	9.37
Total Dissolved Solids	161	104	142	152	166	182	160	126	140
Nitrates (Mg/L)	16.3	20	12.7	12	13.6	14.2	10.9	10	12
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	16.3	20	12.8	12.2	13.8	14.3	11.1	10.1	12.2
Total Phosphorus	0.0753	0.126	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05
Chlorides	22.2	19.5	23.3	21.7	28.2	32	28.2	25.1	30.1
Sodium	8.95	8.95	16.8	13.2	11.2	10.4	16.4	10.1	11.3
Fecal Coliform (col/100 ml)	<1.8	<1.8	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	6.3	3.1	<2.0	5.2	4.1	<1.0	>2,419.6	13.5	5.2

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242952**

Parameters	May 2019	July 2019	Sept 2019	Nov 2019	Jan 2020	March 2019	May 2020	Sept 2020	Nov 2020
Groundwater Elevation (ft)	19.37	17.17	16.57	15.33	15.22	16.31	16.67	16.76	18.72
pH	5.93	5.73	5.99	5.98	6.28	7.57	7.07	6.43	6.67
Conductivity (umhos)	218	258	258	280	231	239	256	224	262
Temperature (Celsius)	18.48	19.3	17.52	15.81	11.83	17.57	14.22	17.64	13.84
Dissolved Oxygen (Mg/L)	8.39	9.47	12.98	12.39	11.1	1.54	2.86	1.52	2.87
Total Dissolved Solids	342	210	100	194	174	156	162	184	238
Nitrates (Mg/L)	11.4	10.9	9.31	15.3	13.9	16.5	17	12.5	17.4
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	11.7	11.2	9.76	15.3	14.3	16.6	17.2	12.7	17.7
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	0.086	<0.05	<0.05	0.15	0.16
Chlorides	69.3	33.7	39	40.7	22.1	26.1	26.7	29.3	28.3
Sodium	39.6	17.2	15.3	14	7.44	20.3	5.74	9	9.31
Fecal Coliform (col/100 ml)	<2.0	NS	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	NS	<2.0	6.3	14.6	57.1	24.9	22.8	1	178.2

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.



Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242952**

Parameters	Jan 2021	March 2021	May 2021	July 2021		
Groundwater Elevation (ft)	20.37	20.57	19.87	17.93		
pH	7.46	7.20	7.51	8.47		
Conductivity (umhos)	247	246	127	229		
Temperature (Celsius)	12.51	13.17	13.67	18.02		
Dissolved Oxygen (Mg/L)	1.24	0.30	0.57	0.11		
Total Dissolved Solids	208	208	232	205		
Nitrates (Mg/L)	14.2	13.9	12.4	11.8		
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05		
Total Nitrogen	14.2	14.2	12.7	12		
Total Phosphorus	<0.05	0.08	0.16	0.2		
Chlorides	31.3	29.2	29.9	24.4		
Sodium	9.05	12	12	8.3		
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0		
Enterococcus (MPN/100 ml)	9.7	167.9	20.3	302.6		

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

24.4

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242953**

Parameters	May/June 2013	Sept 2013	Dec 2013	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014
Groundwater Elevation (ft)	14.9	15.23	14.8	15.9	16.2	16.47	15.91	14.98	14.42
pH	6.1	5.4	6.07	4.75	6.7	6.89	6.78	6.11	6.2
Conductivity (umhos)	303	-	145.7	166.5	174.2	185.1	313.7	198.7	199.3
Temperature (Celsius)	15.5	19.2	15	12.7	11.3	12.1	12.5	14.1	15.4
Dissolved Oxygen (Mg/L)	-	-	-	1.35	5.79	3.65	4.76	4.58	4.2
Total Dissolved Solids	218	-	-	207	216	183	208	236	190
Nitrates (Mg/L)	20.6	20.1	22.6	31.8	29.8	31.1	35	30	32.8
Ammonia Nitrogen	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	-	21.1	-	31.8	29.8	31.1	35	30	32.8
Total Phosphorus	-	5.2	-	0.208	0.121	0.16	0.123	0.0869	0.343
Chlorides	-	-	-	11.4	11.1	21.7	21.3	20.7	20.9
Sodium	-	-	-	11.6	10.1	8.5	8.1	7.9	8.29
Fecal Coliform (col/100 ml)	ND	-	-	<1.8	-	-	<2.0	-	-
Enterococcus (MPN/100 ml)	-	-	-	8.4	-	-	54	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.
4. NS indicates insufficient water available to sample.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242953**

Parameters	Aug 2014	Sept 2014	Nov 2014	Jan 2015	March 2015	May 2015	July 2015	Sept 2015	Nov 2015
Groundwater Elevation (ft)	14.04	13.58	13.14	13.89	15.52	15.05	14.11	-	13.08
pH	6.26	6.83	6.78	6.91	6.93	6.88	6.7	-	-
Conductivity (umhos)	195.6	192.9	190.1	188.6	191.5	195.5	192.2		
Temperature (Celsius)	15.2	14.9	15.2	13.2	11.5	12.2	14.5	-	-
Dissolved Oxygen (Mg/L)	4.07	3.59	3.47	1.71	4.5	4.55	3.67	-	-
Total Dissolved Solids	230	196	177	183	150	183	192	-	182
Nitrates (Mg/L)	29.2	34.8	33.6	30	33.5	36.1	32.2	-	31.4
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Total Nitrogen	29.2	34.8	33.6	30	33.5	36.1	32.2	-	31.2
Total Phosphorus	0.212	0.542	<0.05	0.216	0.401	0.376	0.547	-	0.217
Chlorides	20.1	20.2	20.7	19.9	20.5	20.7	19.7	-	29.4
Sodium	8.36	8.64	8.45	8.23	7.94	8.44	8.41	-	-
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	-	<1.8	-	-	<1.8	<1.8
Enterococcus (MPN/100 ml)	1	-	2	-	2	-	-	17.3	<1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.
4. NS indicates insufficient water av:

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242953**

Parameters	Jan 2016	March 2016	May 2016	July 2016	Sept 2016	Nov 2016	Jan 2017	May 2017	July 2017
Groundwater Elevation (ft)	13.86	15.52	14.99	13.76	13.49	16.45	14.81	14.59	14.13
pH	-	5.88	5.16	5.87	-	6.48	5.96	7.12	7.5
Conductivity (umhos)	-	337	299	313	-	482	214	242	210
Temperature (Celsius)	-	15.67	13.16	16.02	-	14.59	11.14	13.98	19.94
Dissolved Oxygen (Mg/L)	-	4.07	5.76	5.04	-	8.35	8.28	-	6.96
Total Dissolved Solids	161	183	357	188	181	120	108	127	110
Nitrates (Mg/L)	32.6	39.1	44.6	31.2	26.7	20.5	15.6	22.3	13.1
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	32.6	39.1	44.6	31.2	26.7	20.5	15.6	22.3	13.1
Total Phosphorus	0.149	<0.05	0.11	0.0632	0.271	0.187	0.0871	<0.05	0.226
Chlorides	17.5	39.1	17.8	28.7	28	16.6	13.7	19.8	11.1
Sodium	9.16	13.3	14.7	12	12	8.57	9.5	8.22	6
Fecal Coliform (col/100 ml)	<1.8	<1.8	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Enterococcus (MPN/100 ml)	4.1	<1	-	<1	13.4	4.1	<1	<1	365.4

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.
4. NS indicates insufficient water av;

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242953**

Parameters	Sept 2017	Nov 2017	Jan 2018	March 2018	May 2018	Sept 2018	Nov 2018	Jan 2019	March 2019
Groundwater Elevation (ft)	14.69	13.98	13.51	14.55	14.95	14	16.82	17.27	17.49
pH	5.95	6.57	5.96	5.89	5.85	5.36	4.94	6.23	7.18
Conductivity (umhos)	168	188	225	175	149	103	108	117	199
Temperature (Celsius)	19.01	14.8	11.07	11.8	14.9	20.3	13.06	12.04	9.96
Dissolved Oxygen (Mg/L)	-	3.32	3.49	-	-	-	4.94	6.52	10.06
Total Dissolved Solids	84	89	130	130	106	132	76	86	98
Nitrates (Mg/L)	8.11	18	16.2	14.5	13.2	9.14	4.16	3.63	5.61
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	8.11	18	16.4	14.7	13.4	9.29	4.45	3.79	5.74
Total Phosphorus	0.0932	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	<0.05	0.06
Chlorides	8.52	10.5	14.2	11.7	14.3	12	6.33	5.83	9.23
Sodium	5.97	5.97	13.1	6.7	7.7	6.1	5.7	4.3	4.7
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	5.2	<1	<1	<1	3.1	<1.0	>2,419.6	18.7	3

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.
4. NS indicates insufficient water av;

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242953**

Parameters	May 2019	Sept 2019	Nov 2019	Jan 2020	March 2020	May 2020	Sept 2020	Nov 2020	Jan 2021
Groundwater Elevation (ft)	16.15	13.43	12.55	12.6	13.51	13.95	14.00	15.8	19.8
pH	6.67	5.53	5.96	7.2	7.94	6.79	6.93	6.91	7.65
Conductivity (umhos)	49	55	126	57	135	65	136	85	178
Temperature (Celsius)	22.56	17.77	14.72	11.8	17.57	23.13	17.09	13.54	13.75
Dissolved Oxygen (Mg/L)	7.45	3.75	7.5	14.34	16.4	1.03	2.58	2.81	1.33
Total Dissolved Solids	116	114	106	NS	120	78	132	172	165
Nitrates (Mg/L)	4.01	5.26	6.96	NS	7.66	7.18	7.27	9.34	13
Ammonia Nitrogen	<0.05	<0.05	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	4.22	5.58	6.96	NS	7.71	7.36	7.39	9.65	13
Total Phosphorus	0.08	<0.05	NS	NS	<0.05	0.05	0.21	0.14	<0.05
Chlorides	6.26	8.02	NS	NS	9.22	9.34	9.09	9.89	12.7
Sodium	5.7	6.09	6.3	NS	5.61	3.77	5.42	5.2	4.77
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	NS	4.1	51.2	<2.0	1	<1.0	6.3	4.1	1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.
4. NS indicates insufficient water av



Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242953**

<b>Parameters</b>	<b>March 2021</b>	<b>May 2021</b>	<b>July 2021</b>	
<b>Groundwater Elevation (ft)</b>	17.5	16.95	14.93	
<b>pH</b>	7.3	6.28	8.25	
<b>Conductivity (umhos)</b>	246	171	178	
<b>Temperature (Celsius)</b>	13.77	11.27	17.6	
<b>Dissolved Oxygen (Mg/L)</b>	5.98	0.52	0	
<b>Total Dissolved Solids</b>	132	295	170	
<b>Nitrates (Mg/L)</b>	11.3	15.6	13.2	
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05	
<b>Total Nitrogen</b>	11.5	16	13.3	
<b>Total Phosphorus</b>	0.18	0.13	0.07	
<b>Chlorides</b>	14.8	22.7	11.9	
<b>Sodium</b>	4.96	3.08	5.62	
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0	<2.0	
<b>Enterococcus (MPN/100 ml)</b>	22.8	107.1	5.2	

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**
- 4. NS indicates insufficient water av**

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242954**

Parameters	May/June 2013	Sept 2013	Dec 2013	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014
Groundwater Elevation (ft)	14.83	14.5	14.05	15.05	15.44	15.7	15.11	14.34	13.79
pH	5.3	4.8	5.77	4.5	5.99	6.11	6.2	5.98	6.02
Conductivity (umhos)	385	-	186	168.8	195.2	211.3	203	227.3	212.6
Temperature (Celsius)	17.7	19.2	15.1	12.6	11.6	11.3	12.4	13.9	15.3
Dissolved Oxygen (Mg/L)	-	-	-	0.22	5.69	4.74	3.9	4.39	3.92
Total Dissolved Solids	270	-	-	168	172	170	240	264	248
Nitrates (Mg/L)	32.9	21.6	28	27.1	35.3	36	34	39.1	36.6
Ammonia Nitrogen	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	-	21.8	-	27.1	35.3	36	34	39.1	36.6
Total Phosphorus	-	1.8	-	0.158	0.187	0.0505	0.179	<0.05	0.105
Chlorides	-	-	-	20.7	22.9	23.5	23.7	24.7	24.6
Sodium	-	-	-	8.6	8.78	8.5	8.95	9.36	9.56
Fecal Coliform (col/100 ml)	ND	-	-	<1.8	-	-	<2.0	-	-
Enterococcus (MPN/100 ml)	-	-	-	10.9	-	-	28	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242954**

Parameters	Aug 2014	Sept 2014	Nov 2014	Jan 2015	March 2015	May 2015	July 2015	Sept 2015	Nov 2015
Groundwater Elevation (ft)	13.31	12.85	12.41	13.09	14.7	14.38	13.39	12.93	12.36
pH	6.09	6.43	6.85	6.87	6.81	6.84	6.81	6.83	-
Conductivity (umhos)	214.5	172.2	223.8	192.4	224.9	373.2	348.3	356.1	-
Temperature (Celsius)	15.9	15.1	14.9	12.9	11.6	12.1	15.1	16.1	-
Dissolved Oxygen (Mg/L)	3.98	3.73	3.72	4.59	5.36	5.46	4.37	4.55	-
Total Dissolved Solids	238	146	181	78	184	365	326	-	368
Nitrates (Mg/L)	32.1	32	31.1	31.8	38.1	76.6	63.8	49.3	48
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Total Nitrogen	32.1	32	41.4	31.8	38.1	76.6	63.8	-	52.6
Total Phosphorus	0.0699	<0.05	1.02	0.0829	0.137	0.326	0.0607	-	0.0826
Chlorides	24	24.2	24.9	24.3	25.2	33.5	32.1	-	29.4
Sodium	9.84	9.31	10.3	9.46	9.3	10.7	11.2	-	10.4
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	-	<1.8	-	-	<1.8	-
Enterococcus (MPN/100 ml)	4.1	-	-	-	-	9.8	-	9.7	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242954**

Parameters	Jan 2016	March 2016	May 2016	July 2016	Sept 2016	Nov 2016	Jan 2017	May 2017	July 2017
Groundwater Elevation (ft)	13.04	14.69	14.14	14.2	12.85	15.71	13.43	13.84	13.45
pH	-	5.93	5.86	5.4	-	6.95	7.46	7.45	6.82
Conductivity (umhos)	-	497	474	491	-	1,348	317	355	322
Temperature (Celsius)	-	15.22	13.02	16.66	-	13.86	10.43	14.64	17.32
Dissolved Oxygen (Mg/L)	-	3.72	5.18	5.13	-	5.96	8.87	-	6.99
Total Dissolved Solids	269	307	724	302	306	159	225	186	212
Nitrates (Mg/L)	58	74	89.1	71.2	61.4	23.8	23.5	37.4	33.5
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	58	74	89.1	71.2	61.4	23.8	23.5	37.4	33.5
Total Phosphorus	<0.05	<0.05	0.528	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorides	29	29.4	67.2	26.4	27.4	11.3	13.1	22.8	15.6
Sodium	11.8	12.1	35.5	10.7	11.5	12.5	9.47	9.4	9.36
Fecal Coliform (col/100 ml)	<1.8	<1.8	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Enterococcus (MPN/100 ml)	-	<1	<1	-	-	1	3.1	<1	5.1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242954**

Parameters	Sept 2017	Nov 2017	Jan 2018	March 2018	May 2018	July 2018	Sept 2018	Nov 2018	Jan 2019
Groundwater Elevation (ft)	13.94	13.19	12.76	13.74	14.18	14.42	13.3	15.92	16.55
pH	5.81	6.55	5.86	5.79	5.98	5.58	5.37	5.52	6.97
Conductivity (umhos)	326	284	291	261	170	116	113	161	296
Temperature (Celsius)	18.32	14.08	10.2	11.9	15.4	19.6	21.6	13.31	9.32
Dissolved Oxygen (Mg/L)	-	4.84	4.57	-	-	-	-	5.24	7.31
Total Dissolved Solids	201	109	166	150	126	170	152	120	100
Nitrates (Mg/L)	31.1	32.8	23	18.1	15.7	7.74	7.11	5.8	2.4
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	31.1	33	23	18.3	15.9	7.95	7.31	5.8	2.56
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05
Chlorides	14.4	15.3	17.1	13.8	14.5	7.17	9.19	5.39	2.18
Sodium	9.02	9.02	14.5	7.7	8.7	13.6	10.4	15.1	6.8
Fecal Coliform (col/100 ml)	<1.8	<1.8	-	<2.0	<2.0	<2.0	-	<2.0	<2.0
Enterococcus (MPN/100 ml)	5.1	>2,419.6	-	5.2	4.1	-	-	3.1	18.5

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242954**

Parameters	March 2019	May 2019	July 2019	Sept 2019	Nov 2019	March 2020	May 2020	July 2020	Sept 2020
Groundwater Elevation (ft)	16.8	15.49	13.53	12.93	11.86	12.73	13.14	12.64	13.24
pH	6.63	6.23	5.73	NS	6.64	7.49	6.97		
Conductivity (umhos)	214	131	226	NS	147	127	141		
Temperature (Celsius)	9.88	18.16	18.71	NS	15.98	16.56	16.83		
Dissolved Oxygen (Mg/L)	9.48	8.14	2.25	NS	9.79	6.94	3.34		
Total Dissolved Solids	98	122	120	198	NS	96	86	100	84
Nitrates (Mg/L)	5.62	5.75	7.41	6.79	NS	6.18	5.97	9.7	7.96
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	NS	<0.05	0.29	<0.05	<0.05
Total Nitrogen	5.86	5.96	7.6	7.11	NS	6.28	6.5	9.79	8.12
Total Phosphorus	0.05	<0.05	<0.05	0.067	NS	<0.05	<0.05	0.05	0.1
Chlorides	6.89	4.88	9.4	7.84	NS	7.18	8.02	10.3	8.95
Sodium	5.6	5.6	12.7	9.95	NS	5.5	3.74	3.91	5.79
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0			
Enterococcus (MPN/100 ml)	18.3	NS	-	5.2	NS	<1.0	<1.0		

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.



Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242954**

<b>Parameters</b>	<b>Nov 2020</b>	<b>Jan 2021</b>	<b>March 2021</b>	<b>May 2021</b>	<b>July 2021</b>	
<b>Groundwater Elevation (ft)</b>	14.88	16.33	16.83	16.28	14.39	
<b>pH</b>	6.93	7.07	7.65	7.4	8.01	
<b>Conductivity (umhos)</b>	161	178	162	164	163	
<b>Temperature (Celsius)</b>	15.57	14.19	14.74	11.72	18.24	
<b>Dissolved Oxygen (Mg/L)</b>	2.75	1.13	0.27	0.67	0	
<b>Total Dissolved Solids</b>	152	152	155	160	155	
<b>Nitrates (Mg/L)</b>	9.26	9.59	8.96	7.43	9.88	
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05	<0.05	0.08	
<b>Total Nitrogen</b>	9.56	9.66	9.2	8.13	10.2	
<b>Total Phosphorus</b>	0.15	<0.05	0.08	0.59	0.28	
<b>Chlorides</b>	9.83	14.4	15.7	12.2	14.2	
<b>Sodium</b>	6.28	5.48	4.59	4.16	4.87	
<b>Fecal Coliform (col/100 ml)</b>	NS	<2.0	<2.0	<2.0	<2.0	
<b>Enterococcus (MPN/100 ml)</b>	NS	156.4	1,203.30	>2419.6	>2419.6	

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242955**

<b>Parameters</b>	<b>May/June 2013</b>	<b>Sept 2013</b>	<b>Dec 2013</b>	<b>Feb 2014</b>	<b>March 2014</b>	<b>April 2014</b>	<b>May 2014</b>	<b>June 2014</b>	<b>July 2014</b>
<b>Groundwater Elevation (ft)</b>	21.29	21.33	21.23	22.55	22.52	22.56	22.05	21.35	20.99
<b>pH</b>	6.2	5.2	5.87	5.66	6.04	6.58	6.83	6.67	6.81
<b>Conductivity (umhos)</b>	453	-	291	218.4	158.9	200.1	225.7	205.4	282.7
<b>Temperature (Celsius)</b>	14.6	16.5	15	12.6	10.8	11.2	12.5	13.4	14.1
<b>Dissolved Oxygen (Mg/L)</b>	-	-	-	0.95	4.21	4.43	5.12	5.33	5.72
<b>Total Dissolved Solids</b>	266	-	-	252	267	173	241	248	256
<b>Nitrates (Mg/L)</b>	1.52	3.2	1.91	1.05	1.18	1.42	2.33	1.91	3.9
<b>Ammonia Nitrogen</b>	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
<b>Total Nitrogen</b>	-	4.2	-	2.29	1.18	1.42	2.81	2.17	3.9
<b>Total Phosphorus</b>	-	1	-	2.53	1.05	1.48	1.05	1.01	1.78
<b>Chlorides</b>	-	-	-	34.9	38.7	46.3	57.8	42.2	71.7
<b>Sodium</b>	-	-	-	31.5	32.3	35.2	38	35.1	53.5
<b>Fecal Coliform (col/100 ml)</b>	ND	-	-	<1.8	-	-	<2.0	-	-
<b>Enterococcus (MPN/100 ml)</b>	-	-	-	1986.3	-	-	866	-	-

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242955**

Parameters	Aug 2014	Sept 2014	Dec 2014	March 2015	June 2015	Aug 2015	Nov 2015	Feb 2016	May 2016
Groundwater Elevation (ft)	20.55	19.61	20.47	23.2	21.07	20.02	19.77	21.75	21.48
pH	6.77	6.57	6.86	6.96	6.91	7.01	5.82	6.39	5.99
Conductivity (umhos)	290.3	286.7	255.5	146	169.9	211	632	241	443
Temperature (Celsius)	14.9	15.1	14.4	10.5	12.6	14.5	15.34	11.57	12.52
Dissolved Oxygen (Mg/L)	5.15	5.25	4.54	6.07	3.86	4.6	5.34	2.09	2.24
Total Dissolved Solids	260	325	210	114	258	257	410	425	214
Nitrates (Mg/L)	1.6	4.51	2.99	1.06	2.8	4.98	7.04	2.54	9.32
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	1.6	4.51	3.33	1.58	2.8	4.98	7.04	3.19	9.32
Total Phosphorus	0.0554	0.865	1.11	1.09	1	0.608	0.653	1.57	1.24
Chlorides	34.9	170	86.8	20.6	32.5	68.9	274	28.4	72.5
Sodium	8.8	69.1	59.9	26.8	32.4	43	81.7	35.6	67.9
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	<1.8	4.5	<1.8	<1.8	-	-
Enterococcus (MPN/100 ml)	17.3	-	648.8	280.9	1046.2	191.8	88.8	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242955**

Parameters	Aug 2016	Nov 2016	Feb 2017	May 2017	Aug 2017	Nov 2017	Feb 2018	May 2018	Aug 2018
Groundwater Elevation (ft)	20.68	22.66	21.75	21.59	21.3	20.58	20.44	21.23	20.38
pH	6.26	6.22	6.39	7.19	6.03	5.98	8.05	5.84	5.74
Conductivity (umhos)	320	331	241	329	278	298	628	210	211
Temperature (Celsius)	15.28	15.69	11.57	14.08	19.17	15.65	11.26	14.5	18.9
Dissolved Oxygen (Mg/L)	5.18	8.71	2.09	-	5.57	5.06	-	-	-
Total Dissolved Solids	232	216	180	264	246	153	360	200	222
Nitrates (Mg/L)	5	2.72	4.62	6.2	6.27	6.71	10.7	10.4	14.2
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05
Total Nitrogen	5	3.41	5.23	6.2	6.27	6.71	11	10.6	14.3
Total Phosphorus	1.18	1.51	1.41	0.472	0.457	0.682	0.06	<0.05	<0.05
Chlorides	45.8	38.2	51.4	82.2	60.3	38.2	138	38.5	36
Sodium	40.3	35.7	33.3	48.8	40.01	33.2	62.4	38.6	28.3
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	648.8	456.9	235.9	33.6	2,419.60	88.4	64.5	46.5	42.8

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242955**

Parameters	Nov 2018	Feb 2019	May 2019	Aug 2019	Nov 2019	Feb 2020	May 2020	Aug 2020	Nov 2020
Groundwater Elevation (ft)	23.06	23.1	22.4	20.24	18.64	20.19	20.53	19.29	22.39
pH	4.67	5.64	6.58	6.17	6.81	5.92	7.84	6.96	7.12
Conductivity (umhos)	321	328	256	372	630	443	442	583	259
Temperature (Celsius)	12.28	12.77	16.84	16.29	13.13	14.81	15.84	18.76	14.22
Dissolved Oxygen (Mg/L)	5.74	6.77	10.05	2.92	2.17	1.72	3.51	1.04	15.08
Total Dissolved Solids	208	218	180	252	358	300	220	326	210
Nitrates (Mg/L)	18.9	18.2	8.31	6.9	6.13	7.36	9.26	10.5	9.74
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	19	18.3	8.53	7.2	6.13	7.36	9.47	10.9	10
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	0.2
Chlorides	20.6	31.5	32.1	64.6	192	97	84.1	158	35.4
Sodium	33	32.3	26.5	30.7	128	72.5	33	71	11.4
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	94	<2.0
Enterococcus (MPN/100 ml)	104.3	25.9	NS	461.1	123.6	163.8	233.3	689.3	980.4

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242955**

<b>Parameters</b>	<b>Feb 2021</b>	<b>May 2021</b>	<b>Aug 2021</b>
<b>Groundwater Elevation (ft)</b>	23.64	22.68	20.23
<b>pH</b>	8.19	6.1	7.62
<b>Conductivity (umhos)</b>	295	153	314
<b>Temperature (Celsius)</b>	12.84	12.26	17.87
<b>Dissolved Oxygen (Mg/L)</b>	0.01	0.61	1.34
<b>Total Dissolved Solids</b>	238	285	295
<b>Nitrates (Mg/L)</b>	16.5	15.3	11.1
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05
<b>Total Nitrogen</b>	16.8	15.9	11.4
<b>Total Phosphorus</b>	<0.05	0.76	0.27
<b>Chlorides</b>	36.8	36.1	68
<b>Sodium</b>	15.3	17.9	33.4
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	285.1	>2419.6	>2419.6

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**



Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242956**

Parameters	May/June 2013	Sept 2013	Dec 2013	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014
Groundwater Elevation (ft)	19.23	19.42	19.16	20.37	20.43	20.54	20	19.26	18.87
pH	6.7	6.2	6.54	6.03	6.19	6.29	6.22	6.12	6.41
Conductivity (umhos)	440	-	145.7	117.9	110.9	105.8	107.9	113.7	129.1
Temperature (Celsius)	14.4	17	15	10.5	9.5	10.3	12.3	13.8	14.8
Dissolved Oxygen (Mg/L)	-	-	-	4.01	4.92	5.41	4.82	5.02	4.56
Total Dissolved Solids	254	-	-	146	121	95	99	136	124
Nitrates (Mg/L)	17.8	12	7.48	6.71	5.29	4.29	4.53	4.81	5.46
Ammonia Nitrogen	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	-	13	-	7.35	5.29	4.29	4.91	4.81	5.46
Total Phosphorus	-	0.15	-	1.57	1.09	0.873	1.2	0.617	0.61
Chlorides	-	-	-	12.1	9.88	8.45	9.8	11.5	15
Sodium	-	-	-	17.4	17.8	17.5	16.4	19.2	26.5
Fecal Coliform (col/100 ml)	ND	-	-	<1.8	-	-	<2.0	-	-
Enterococcus (MPN/100 ml)	-	-	-	70.3	-	-	17	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242956**

Parameters	Aug 2014	Sept 2014	Dec 2014	March 2015	June 2015	Aug 2015	Nov 2015	Feb 2016	May 2016
Groundwater Elevation (ft)	18.43	17.75	18.26	19.97	18.96	17.96	17.63	19.52	19.32
pH	6.39	6.96	6.87	6.88	6.91	6.91	6.56	6.67	5.91
Conductivity (umhos)	174.9	185.2	165	103.9	110.7	160.2	338	163	232
Temperature (Celsius)	15.2	15.3	14.3	9.3	13.5	14.9	15.67	11.01	12.22
Dissolved Oxygen (Mg/L)	5.66	4.79	4.54	5.18	3.31	3.86	5.12	1.6	4.32
Total Dissolved Solids	170	100	103	98	127	137	187	200	212
Nitrates (Mg/L)	7.51	8.89	7.77	2.56	4.1	6.72	9.47	14.2	1.76
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	7.51	8.89	7.77	2.56	4.1	6.72	9.47	14.2	1.76
Total Phosphorus	0.266	0.227	0.368	0.586	0.332	0.32	0.205	0.417	0.295
Chlorides	25.4	28.1	19.7	7.16	10.7	17.9	27.7	27.8	44.9
Sodium	35	35.6	31.5	21.6	24.5	37.2	44.4	28.3	39.7
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	<1.8	4.5	<1.8	<1.8	-	<1.8
Enterococcus (MPN/100 ml)	49.7	-	7.5	3.1	7.5	16.1	<1	-	4.1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242956**

Parameters	Aug 2016	Nov 2016	Feb 2017	May 2017	Aug 2017	Nov 2017	Feb 2018	May 2018	Aug 2018
Groundwater Elevation (ft)	18.44	20.59	19.23	19.27	19.19	18.46	18.27	19.1	18.34
pH	6.27	5.54	6.58	7.09	6.1	6.44	7.55	6.37	6
Conductivity (umhos)	481	237	277	211	278	394	314	163	187
Temperature (Celsius)	16.01	17.03	12.74	15.8	19.17	16.28	12.11	16.3	20.5
Dissolved Oxygen (Mg/L)	6.64	7.47	8.11	-	6.17	4.51	-	-	-
Total Dissolved Solids	313	129	174	230	216	225	248	168	212
Nitrates (Mg/L)	30.6	9.17	17.3	18.3	20.2	26.4	15.7	14.9	16.5
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05
Total Nitrogen	30.6	9.17	17.3	18.3	20.2	26.4	15.9	15.2	17.8
Total Phosphorus	0.242	0.37	0.261	0.176	0.115	0.139	0.06	<0.05	<0.05
Chlorides	71.6	25.7	41.5	51	27.2	49.6	45.5	19.8	29.2
Sodium	59.3	18.7	30	34.6	32.5	50.3	47.3	30.7	39.8
Fecal Coliform (col/100 ml)	<1.8	1.8	<1.8	<1.8	<1.8	<1.8	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	24.1	2	7.3	2	62.7	8.6	22.1	71.2	73.3

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242956**

Parameters	Nov 2018	Feb 2019	May 2019	Aug 2019	Nov 2019	Feb 2020	May 2020	Aug 2020	Nov 2020
Groundwater Elevation (ft)	20.98	21.12	20.32	18.26	16.76	17.83	18.36	17.39	20.21
pH	5.23	5.41	7.41	5.99	6.72	5.82	7.49	6.69	6.73
Conductivity (umhos)	329	428	376	372	433	433	394	338	314
Temperature (Celsius)	15.65	15.14	18.98	17.91	15.55	13.31	16.13	18.47	15.89
Dissolved Oxygen (Mg/L)	5.23	5.71	10.66	2.84	10.84	1.58	1.96	2.57	4.45
Total Dissolved Solids	238	360	358	326	314	340	274	262	242
Nitrates (Mg/L)	27.9	32	27	27.6	29.3	26.9	25.6	22.1	20
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	<27.9	32.1	<27.1	27.6	29.3	26.9	25.8	22.4	20.2
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	<0.05	0.17
Chlorides	25	55.1	38.4	39.7	52.5	67.1	58.4	45.9	40.4
Sodium	30.3	38.6	31.2	32.9	51.4	64.4	32	30.1	13
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	4.1	1	NS	>2,419.6	49.5	18.7	36.8	20.3	34.1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Milton Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242956**

<b>Parameters</b>	<b>Feb 2021</b>	<b>May 2021</b>	<b>Aug 2021</b>
<b>Groundwater Elevation (ft)</b>	21.36	20.64	17.58
<b>pH</b>	8.39	7.67	6.64
<b>Conductivity (umhos)</b>	321	162	367
<b>Temperature (Celsius)</b>	12.09	14.11	16.79
<b>Dissolved Oxygen (Mg/L)</b>	0.89	1.03	0.77
<b>Total Dissolved Solids</b>	290	178	378
<b>Nitrates (Mg/L)</b>	24.3	7.39	24.6
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05
<b>Total Nitrogen</b>	24.5	7.63	24.9
<b>Total Phosphorus</b>	0.05	0.28	0.18
<b>Chlorides</b>	36.6	13.4	56.7
<b>Sodium</b>	22.3	16.5	33.4
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	5.2	191.8	501.2

**Notes:**

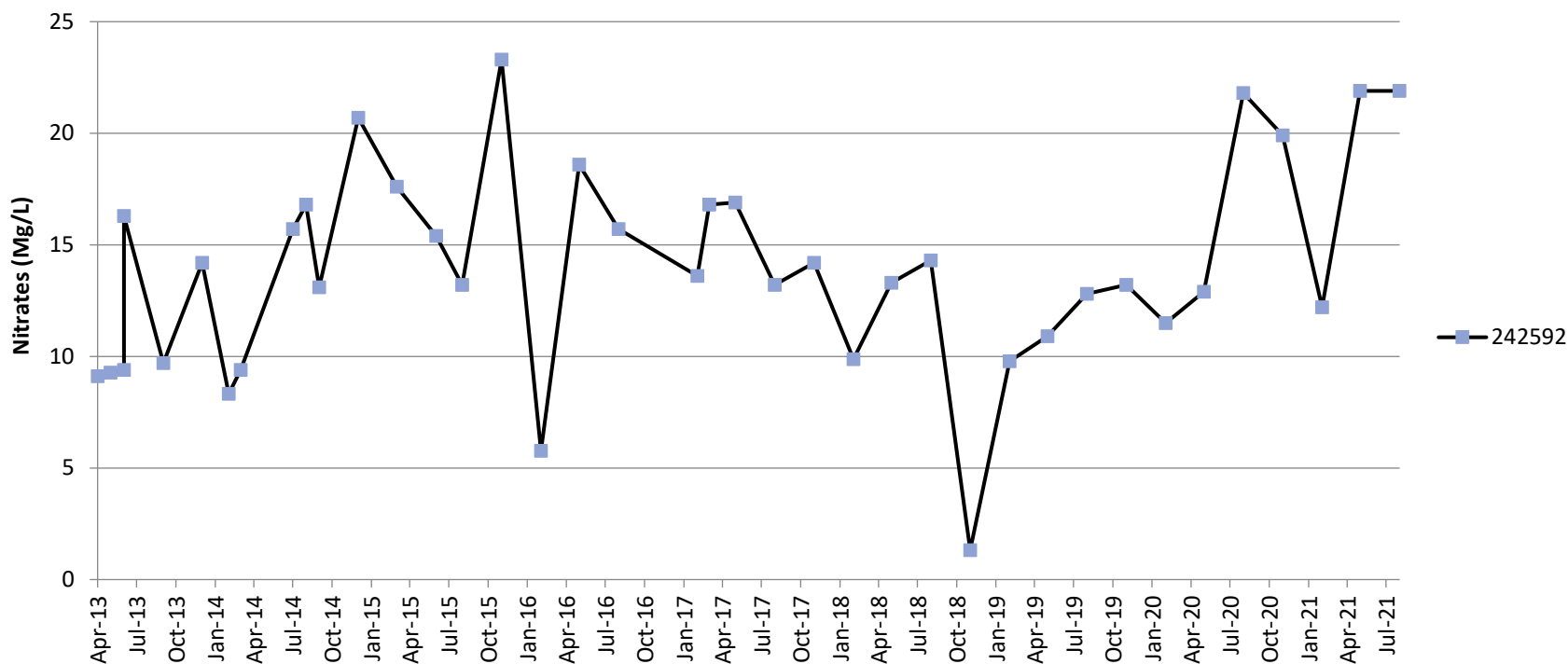
- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**

# **ATTACHMENT 4**

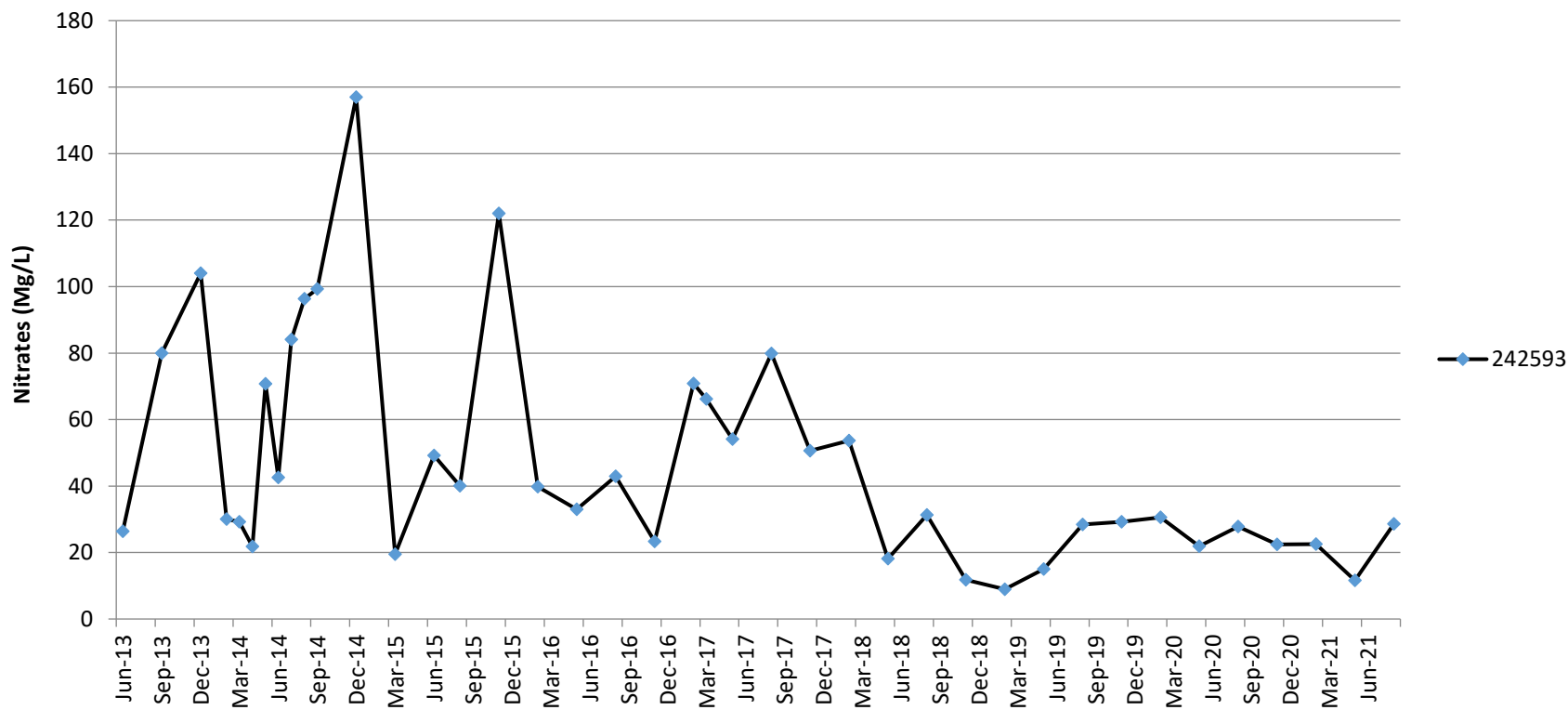
## **GRAPHICAL PRESENTATION OF NITRATE LEVELS IN GROUNDWATER SAMPLES**



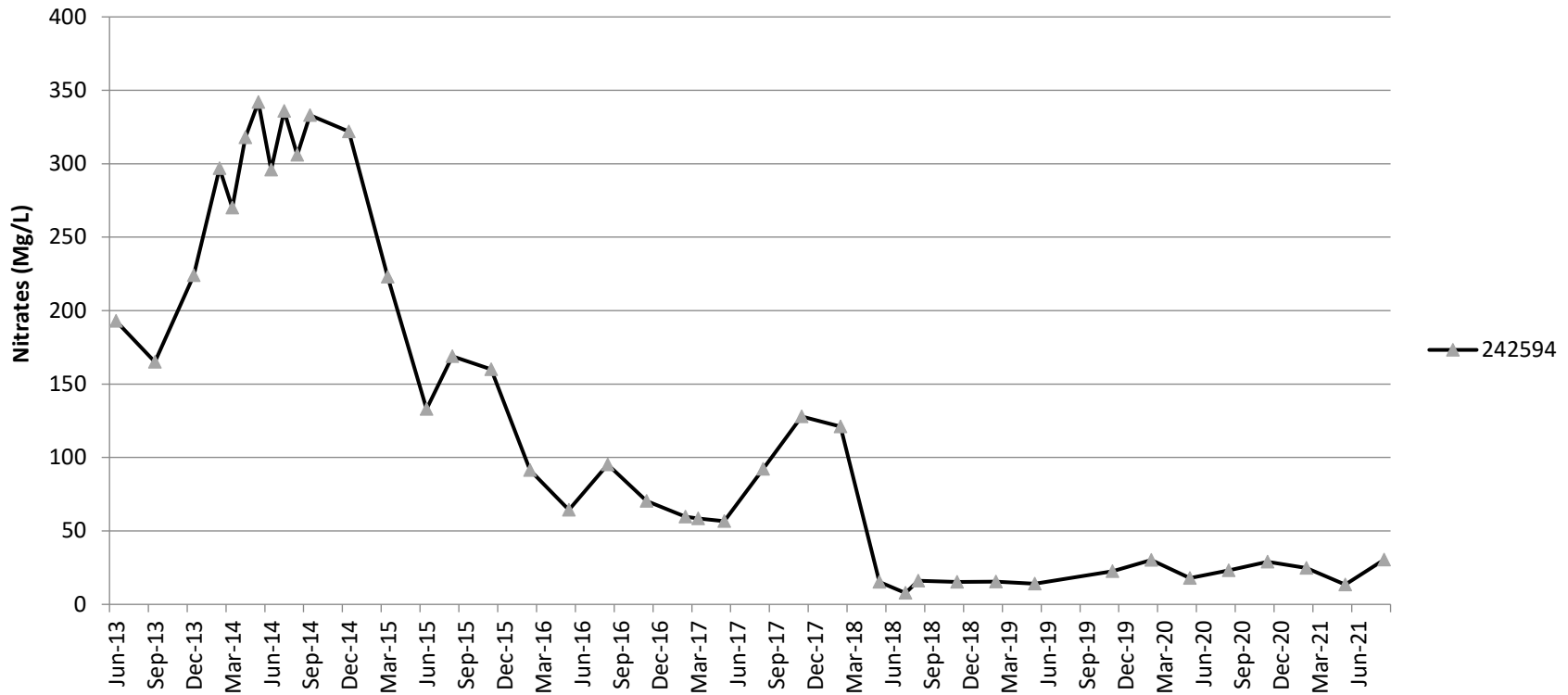
**Milton Farm, Nitrates in Monitor Well Samples  
Well 242592**



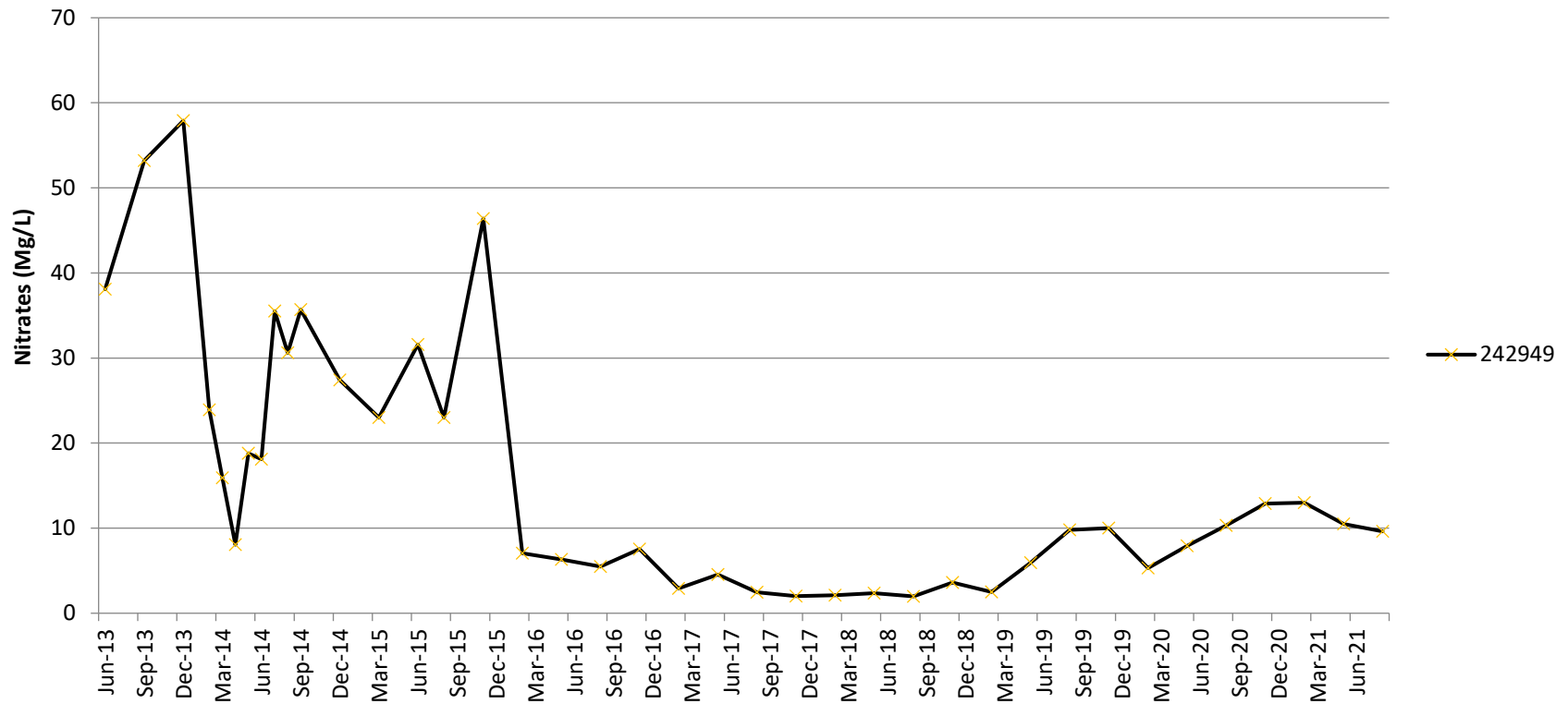
**Milton Farm, Nitrates in Monitor Well Samples  
Well 242593**



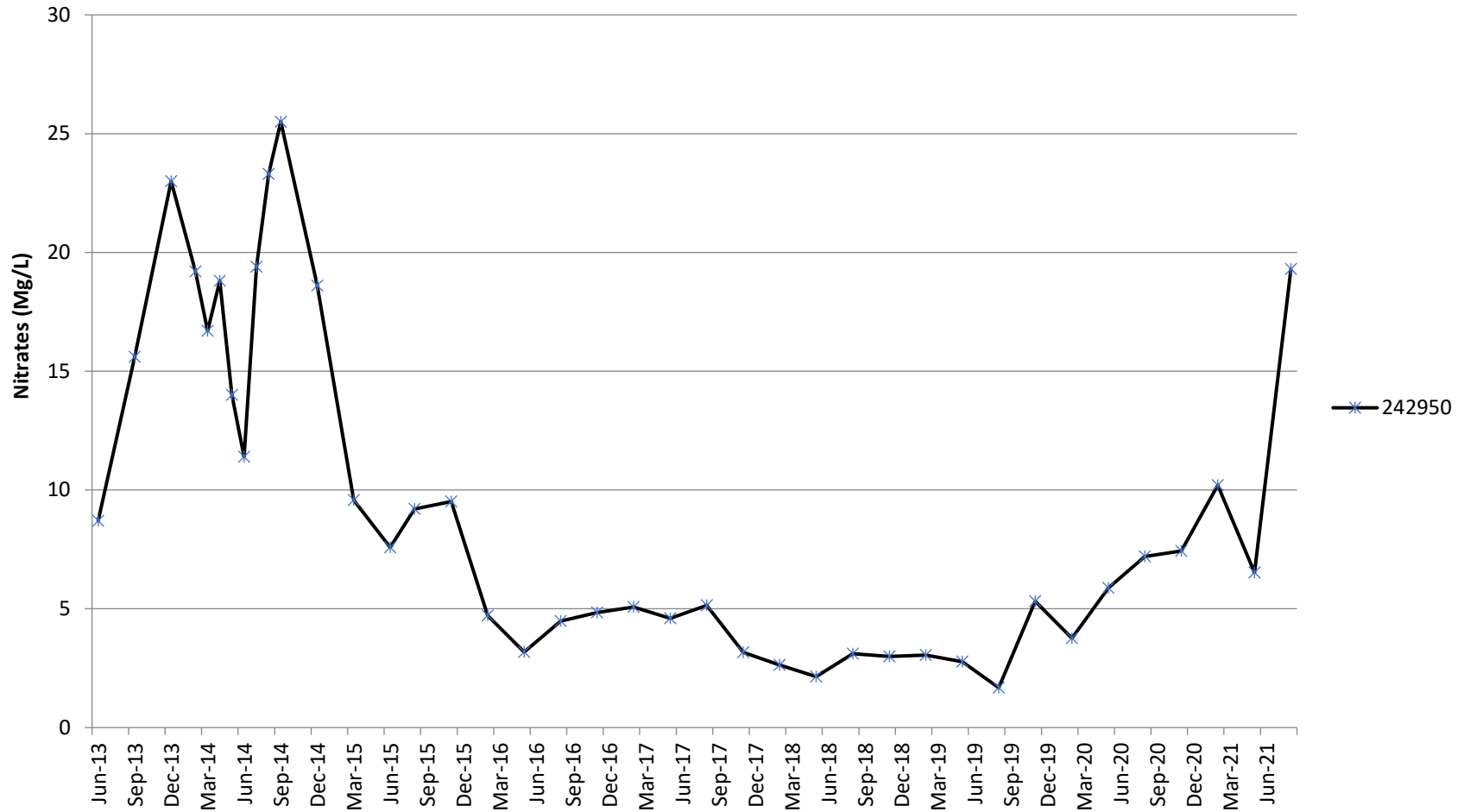
**Milton Farm, Nitrates in Monitor Well Samples  
Well 242594**



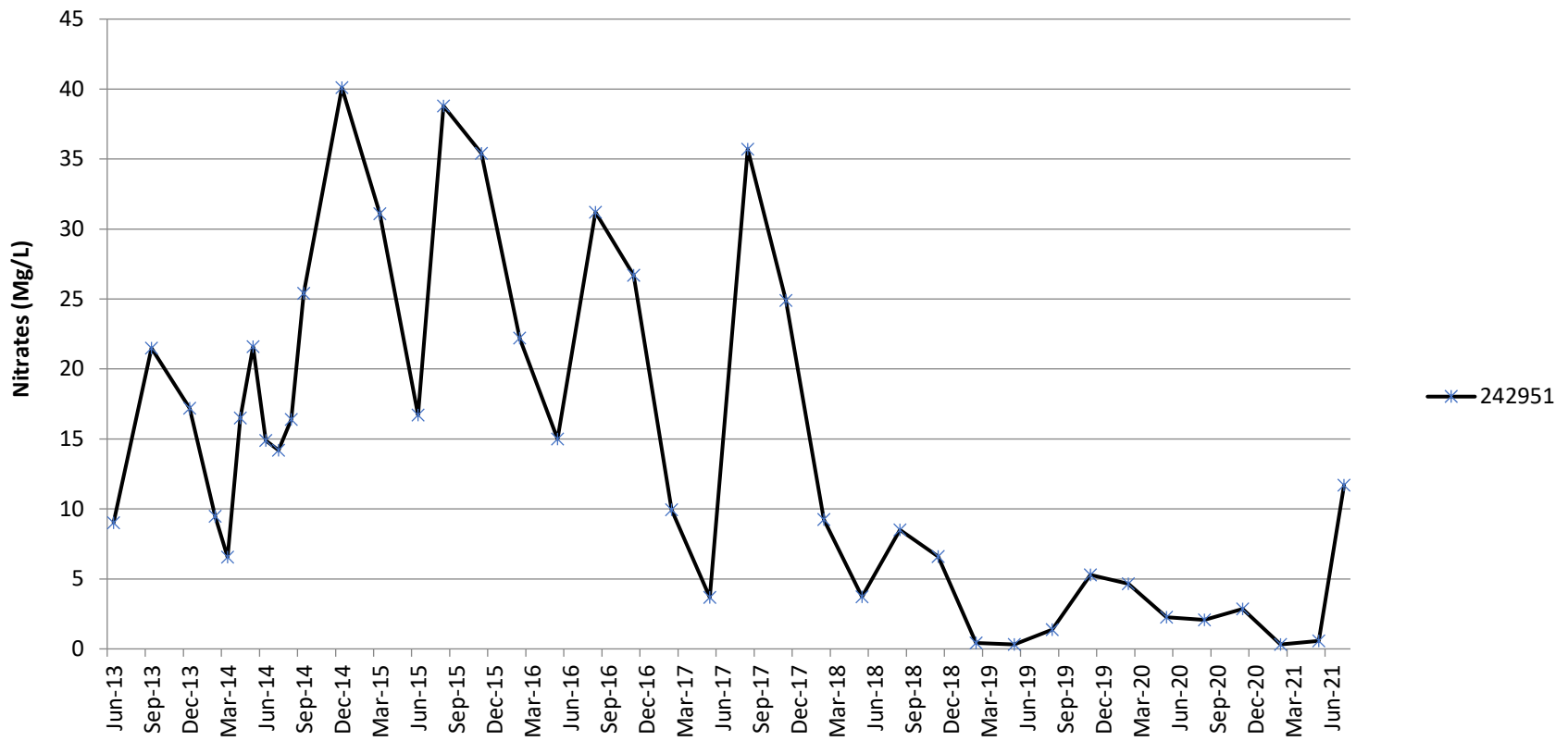
# Milton Farm, Nitrates in Monitor Well Samples Well 242949



**Milton Farm, Nitrates in Monitor Well Samples  
Well 242950**

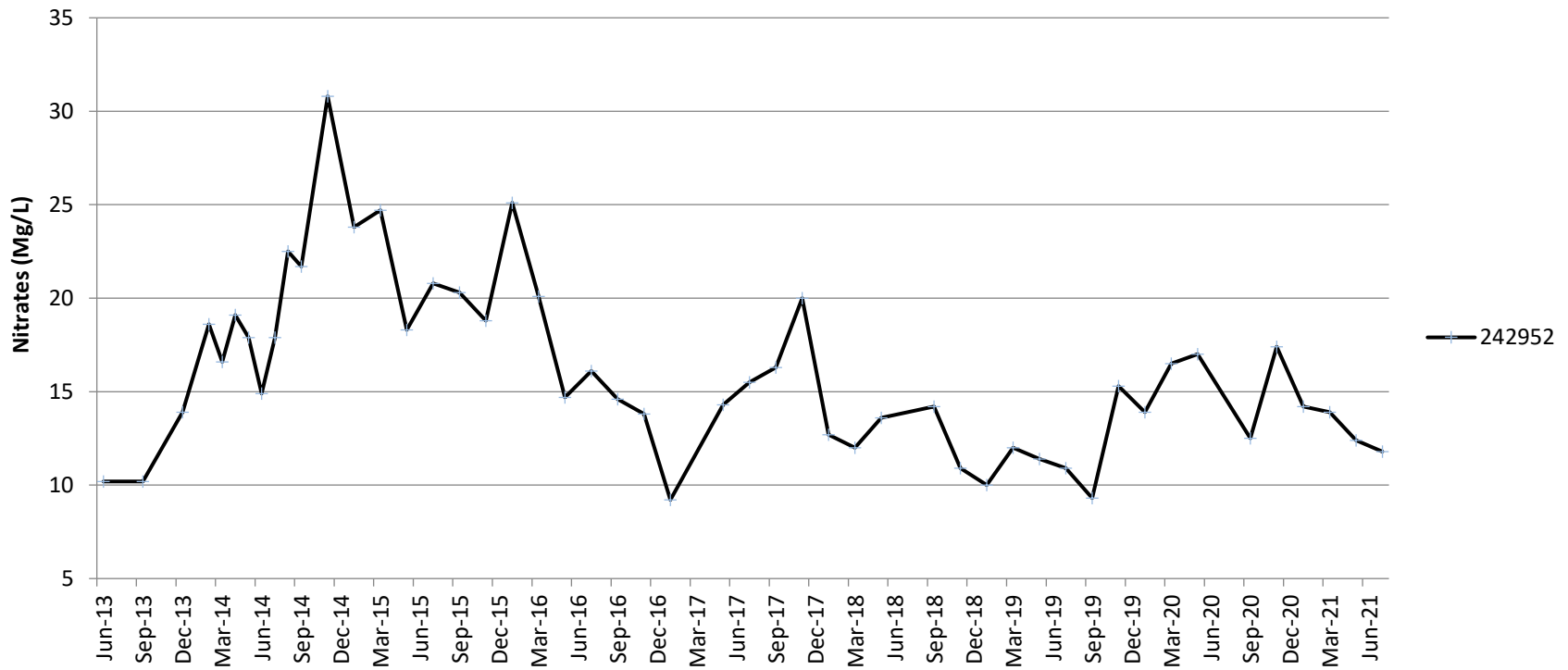


**Milton Farm, Nitrates in Monitor Well Samples  
Well 242951**

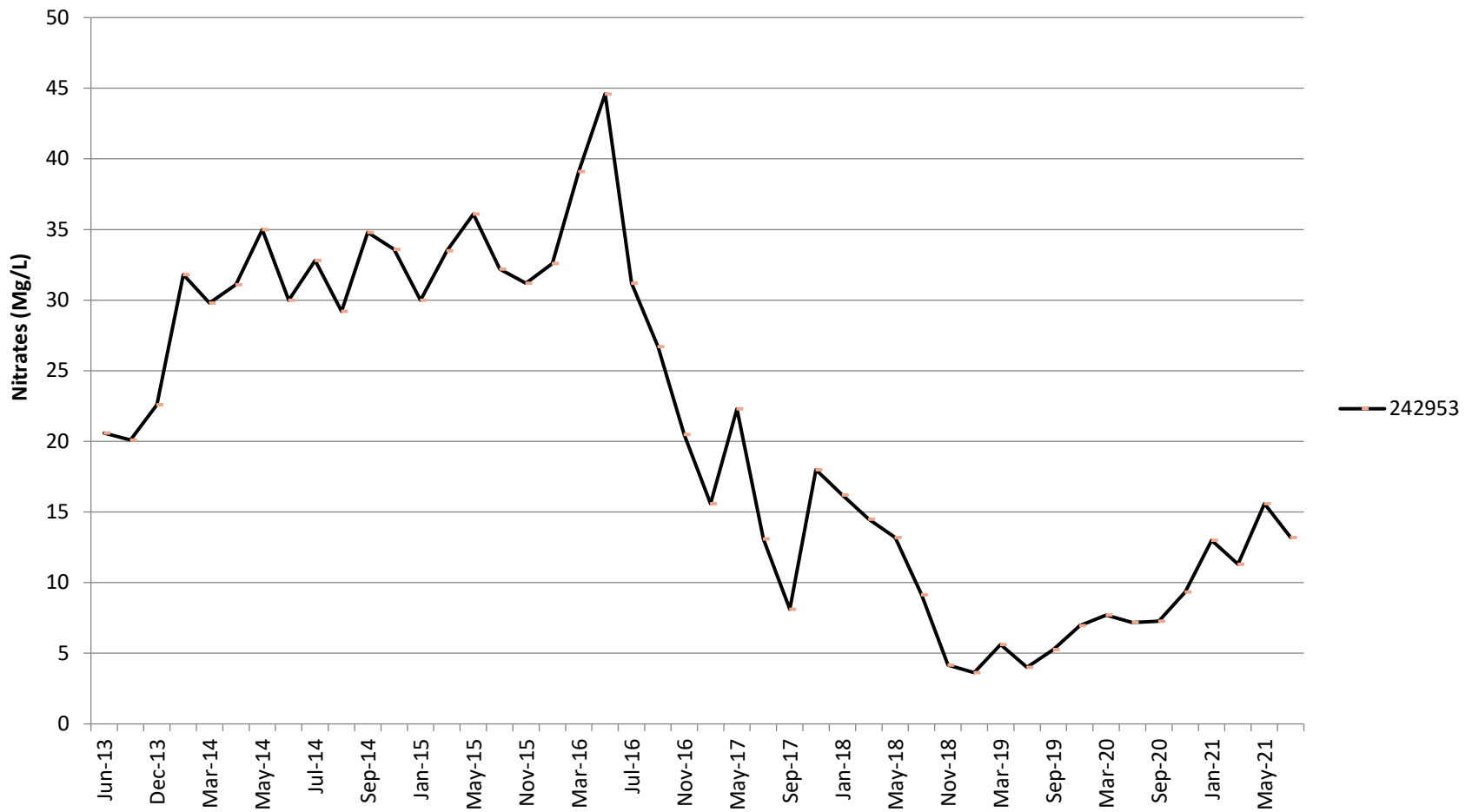




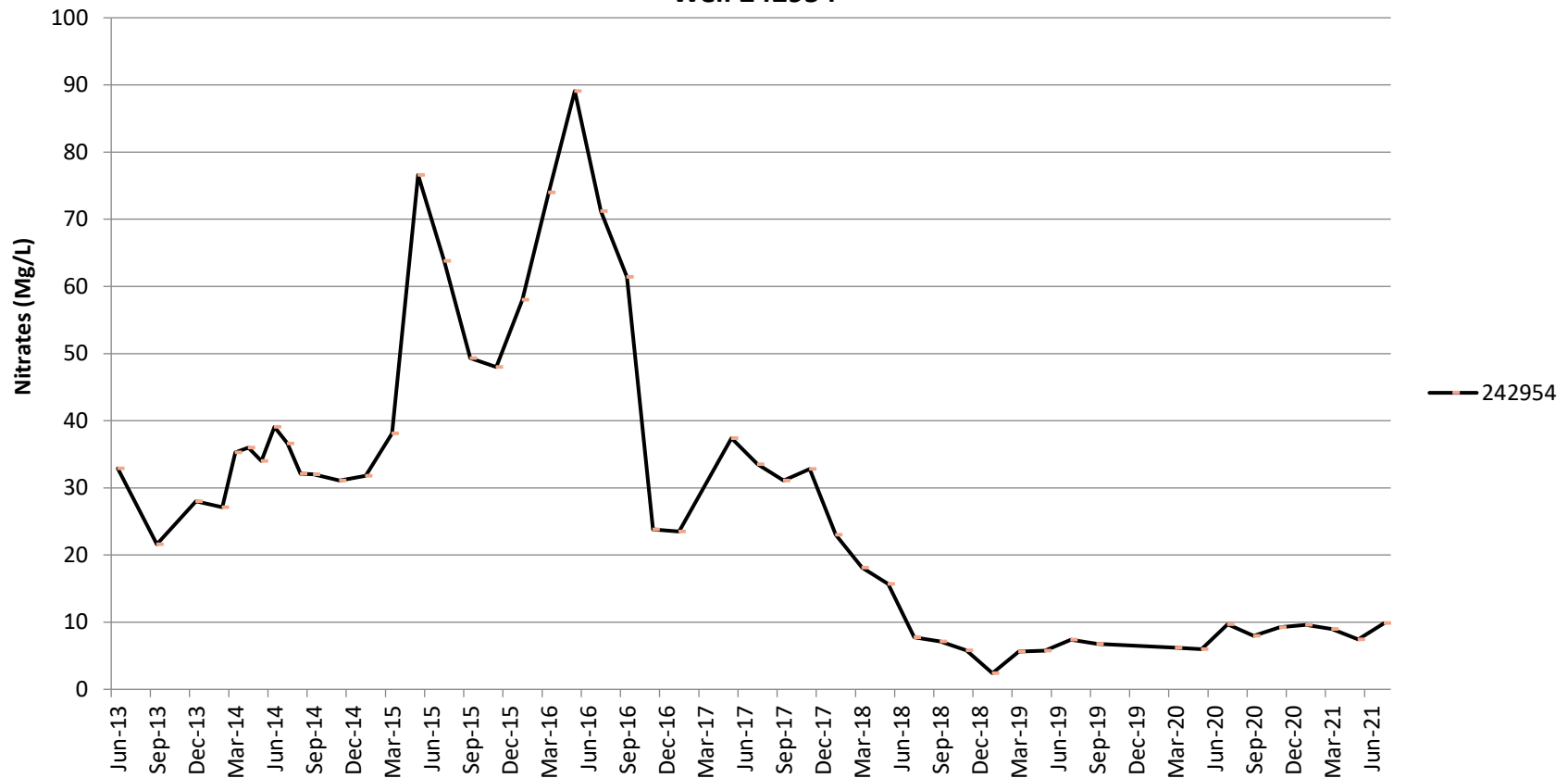
**Milton Farm, Nitrates in Monitor Well Samples  
Well 242952**



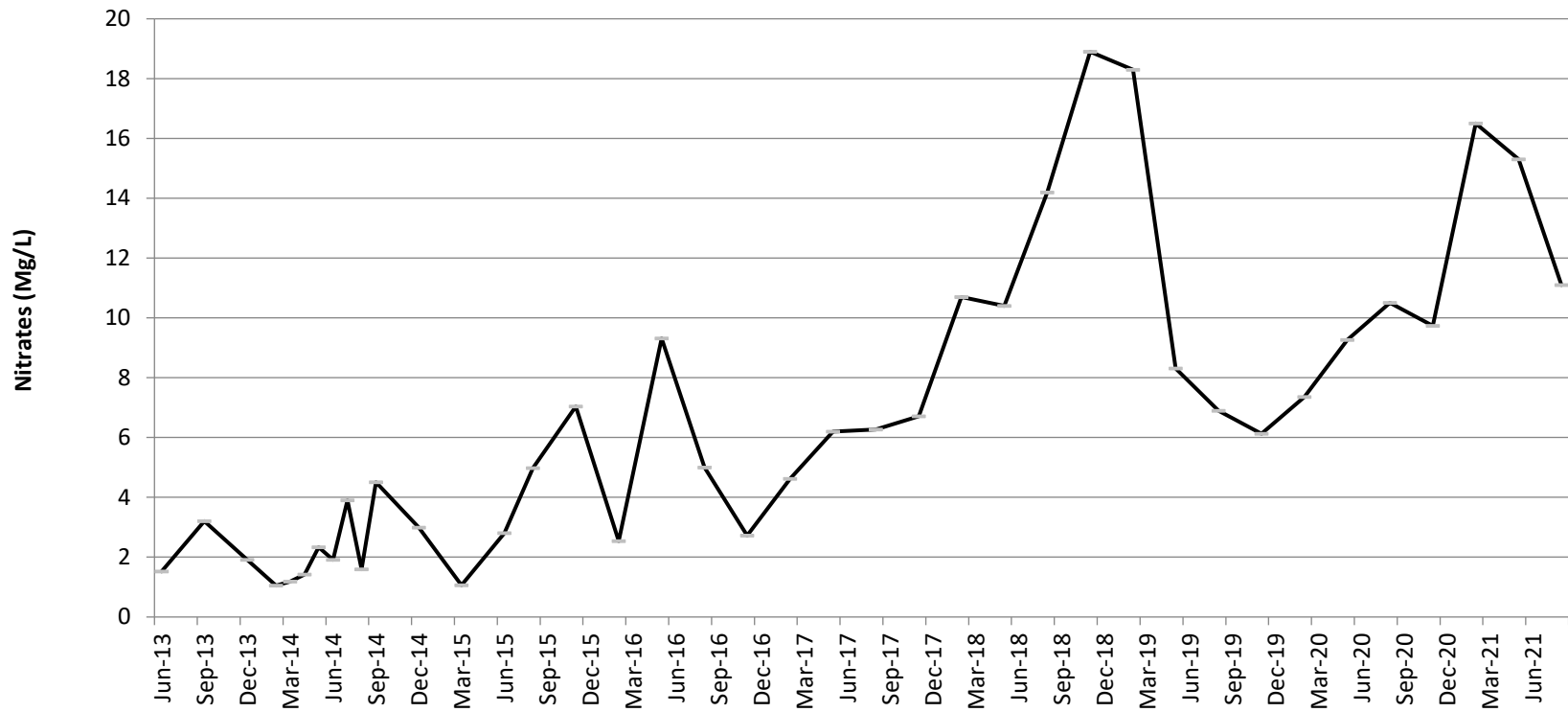
**Milton Farm, Nitrates in Monitor Well Samples  
Well 242953**



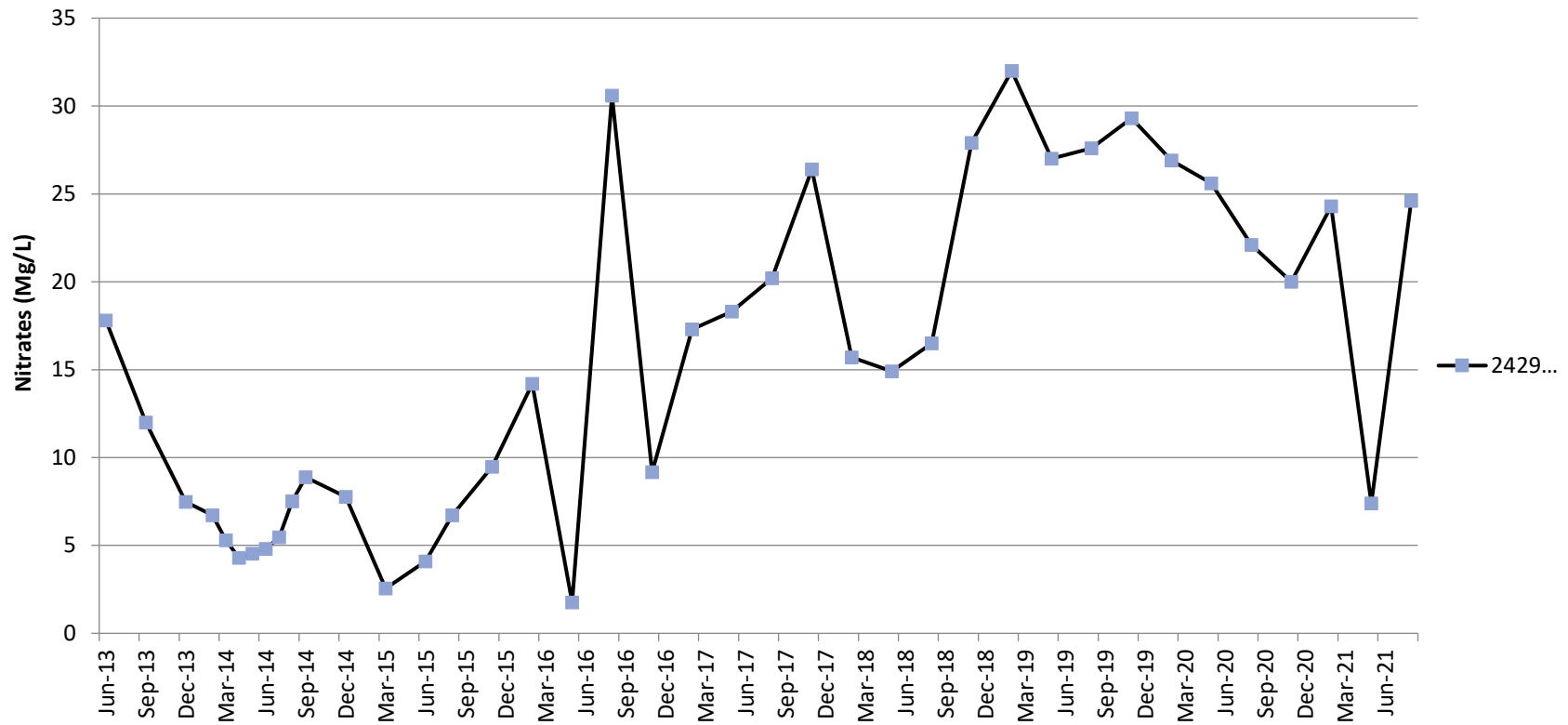
**Milton Farm, Nitrates in Monitor Well Samples  
Well 242954**



**Milton Farm, Nitrates in Monitor Well Samples  
Well 242955**



**Milton Farm, Nitrates in Monitor Well Samples  
Well 242956**



August 27, 2021

***Via Electronic Mail***

Mr. Brian Churchill  
DNREC, Surface Water Discharges Section  
89 Kings Highway  
Dover, DE 19901

RE: Duffield Associates, LLC Project No. 11191.EB  
Clean Delaware, LLC  
Class B Sanitary and Non-Sanitary Wastes, Slow Rate Land Treatment Sites  
Harbeson Farm, Permit Number AGU 1702-S-03  
Quarterly Groundwater Monitoring Report (August 2021)

Dear Mr. Churchill:

Duffield Associates, LLC (Duffield) has prepared this letter report to summarize groundwater monitoring for the Clean Delaware, LLC land treatment farm in Harbeson, Delaware. This report includes data collected through August 2021 and is required per State Permit No. AGU 1702-S-03, issued by the Department of Natural Resources and Environmental Control (DNREC), Surface Water Discharges Section, effective January 1, 2017.

Per the permit requirements, groundwater monitoring at the project site is performed as follows:

1. The collection of groundwater samples for laboratory analysis is required on a quarterly basis for monitoring wells 242580, 242582, 242583, and 250844.
2. The collection of groundwater samples for laboratory analysis is required every other month for monitoring well 242581.

The last sampling events were completed in July and August of 2021. The monitoring was completed as follows:

1. The depth to water was measured in the monitoring wells using an electronic water level indicator. Well 242581 was not located during the July monitoring event because of the full-grown corn.
2. Three volumes of water were removed from the wells and the wells were left to recharge to at least 90% capacity prior to sampling.
3. Field measurements of pH, temperature, and conductivity were recorded using electronic water quality meters.
4. Groundwater samples were collected in laboratory-prepared bottle ware, placed on ice in a transport cooler, and submitted to Envirocorp Laboratories, Inc. on the days of sampling.



## **GROUNDWATER ELEVATIONS AND FLOW DIRECTION**

Water table elevations recorded for the monitoring wells to date are summarized on the table and graph included as Attachment 1: Groundwater Elevation Data.

A record high groundwater elevation was recorded in well 242582 during November 2020. The water levels decreased slightly through January and February 2021, and then increased by an average of 0.54 feet between February and March 2021. The water levels have since decreased by an average of four feet between March and August 2021.

The aerial photograph in Attachment 1 includes the well locations, groundwater elevations, contours of equal groundwater elevation, and direction of groundwater flow for August 2021. As indicated by the groundwater elevation contours, the direction of groundwater flow shifts from northerly on the south side of the site, to northeasterly across the central and north portions of the site. This flow pattern has remained consistent for the monitoring events completed to date.

## **RESULTS OF LABORATORY ANALYSIS**

The groundwater samples collected during the monitoring events were submitted to Envirocorp Labs, Inc. for analysis of the following:

- Nitrates
- Ammonia Nitrogen
- Total Nitrogen
- Total Phosphorus
- Chlorides
- Sodium
- Total Dissolved Solids (TDS)
- Fecal Coliform Bacteria (FCB)
- Enterococcus Bacteria (EB)

Copies of the laboratory reports for the August 2021 monitoring event are enclosed as Attachment 2: Laboratory Reports. Tables and graphs summarizing the laboratory analysis to date are included as Attachment 3.

## Nitrates

The following table summarizes the lowest reported concentrations, highest reported concentrations of and ranges in nitrate concentrations over recent time periods.

Summary of Nitrate Concentrations parts per million (ppm)					
Well Number	Lowest Reported Concentration	Highest Reported Concentration	Concentration Range 2018 through 2020	Jan to May 2021	August 2021
242580	1.49	20.4	2.97 to 7.8	4.10 to 6.20	8.38
242581	15.5	62.8	17.8 to 29.8	15.5 to 20.0	No Sample
242582	2.73	101	3.28 to 8.55	2.73 to 3.90	4.08
242583	7.76	28.7	10.5 to 21.6	17.7 to 18.2	13.4
250844	1.74	33.0	2.03 to 14.7	1.74 to 3.61	1.78

Nitrates in well 242580 have increased slightly over the last three monitoring events but remain below the EPA maximum allowable concentration (MCL) permitted for drinking water supplies. Overall decreasing trends have been evident at most of the well locations.

## Chlorides

The following table summarizes the lowest reported concentrations, highest reported concentrations of and ranges in chloride concentrations over recent time periods.

Summary of Chloride Concentrations (ppm)					
Well Number	Lowest Reported Concentration	Highest Reported Concentration	Concentration Range 2018 through 2020	Jan to May 2021	August 2021
242580	6.25	115	8.42 to 22	9.25 to 53.5	23
242581	34	64.0	36.9 to 63.1	36.8 to 46.4	No Sample
242582	4.4	37.0	4.9 to 11.6	8.72 to 11.4	9.07
242583	5.16	50.2	6.2 to 25.9	29.6 to 50.2	72.8
250844	3.38	18.3	5.13 to 18.3	5.01 to 6.31	3.8

A new record high concentration of chlorides was reported in well 242583 during May 2021 and again in August 2021. However, all concentrations are well below the EPA Secondary Drinking Water Maximum Contaminant Level (MCL) of 250 ppm for chlorides. Secondary standards are for water aesthetics and are not enforceable. None of the chloride concentrations reported to date have exceeded the Secondary MCL of 250 ppm.

## Sodium

The following table summarizes the lowest reported concentrations, highest reported concentrations of and ranges in sodium concentrations over recent time periods.

Summary of Sodium Concentrations (ppm)					
Well Number	Lowest Reported Concentration	Highest Reported Concentration	Concentration Range 2018 through 2020	Jan to May 2021	August 2021
242580	5.39	42.9	6.01 to 42.9	5.44 to 29.8	24.6
242581	20.0	90.9	16.7 to 47.6	22.9 to 24.6	No Sample
242582	1.06	9.35	1.06 to 7	2.91 to 3.1	3.37
242583	1.5	9.28	1.5 to 7.5	4.35 to 6.20	7.25
250844	2.02	13.2	2.02 to 13.2	2.59 to 4.72	4.57

Sodium levels reported in August 2021 were within the historic ranges of concentrations reported for the monitor well locations. Sodium is not included on the Environmental Protection Agency's (EPA's) Primary or Secondary Drinking Water Standard MCL lists.

### Phosphorus

The following table summarizes the lowest reported concentrations, highest reported concentrations of and ranges in phosphorus concentrations over recent time periods.

Summary of Phosphorus Concentrations (ppm)					
Well Number	Lowest Reported Concentration	Highest Reported Concentration	Concentration Range 2018 through 2020	Jan to May 2021	August 2021
242580	Not Detected	0.183	Not Detected to 0.103	Not Detected to 0.08	0.18
242581	Not Detected	0.970	Not Detected to 0.27	Not Detected to 0.11	No Sample
242582	Not Detected	1.31	Not Detected to 0.155	Not Detected	0.19
242583	Not Detected	0.112	Not Detected	Not Detected	Not Detected
250844	Not Detected	0.0751	Not Detected to 0.06	Not Detected	Not Detected

Phosphorus was previously reported at all of the monitor well locations, but the concentrations have been substantially reduced since 2014. Phosphorus was detected in wells 242580 and 242582 during August 2021, at concentration within historical ranges.

### Total Dissolved Solids (TDS)

The following table summarizes the lowest reported concentrations, highest reported concentrations of and ranges in TDS concentrations over recent time periods.

Summary of TDS Concentrations (ppm)					
Well Number	Lowest Reported Concentration	Highest Reported Concentration	Concentration Range 2018 through 2020	Jan to May 2021	August 2021
242580	76	348	104 to 322	128 to 252	405
242581	176	704	260 to 431	270 to 338	No Sample
242582	90	770	90 to 158	118 to 120	180
242583	48	438	120 to 276	280 to 370	462
250844	92	229	104 to 196	102 to 122	158

New record high concentrations of TDS were reported in wells 242580 and 242583 during August 2021. The EPA maintains a Secondary Drinking Water MCL of 500 ppm for TDS. As indicated in the summary table, TDS previously exceeded 500 ppm in samples collected from wells 242581 and 252582. The TDS concentrations have remained below the 500 ppm secondary standard at all of the well locations since 2013.

### **Fecal Coliform Bacteria (FCB)**

The following table summarizes the lowest concentration, highest concentration, and ranges in 2020 and 2021.

<b>Summary of Fecal Coliform Concentrations (colonies per 100 milliliters)</b>					
<b>Well Number</b>	<b>Lowest Reported Concentration</b>	<b>Highest Reported Concentration</b>	<b>Concentration Range 2018 through 2020</b>	<b>Jan to May 2021</b>	<b>August 2021</b>
242580	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
242581	Not Detected	46	Not Detected to 18	Not Detected	No Sample
242582	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
242583	Not Detected	110	Not Detected to 18	Not Detected	Not Detected
250844	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

Fecal coliform have only been detected in samples collected from two of the monitoring wells to date, and had not been detected in any of the monitoring wells since the beginning of 2018. Fecal coliform were reported at 18 colonies per 100 milliliters in well 242583 in September 2020 but were not reported in any of the samples collected in November 2020, and during the 2021 monitoring events completed to date in 2021.

### **Enterococcus Bacteria (EB)**

The following table summarizes the highest reported concentration of EB, the range in EB concentrations during selected time periods.

<b>Well Number</b>	<b>Highest Reported Concentration</b>	<b>Concentration Range 2018 through 2020</b>	<b>Jan to May 2021</b>	<b>August 2021</b>
242580	8.3	Not Detected to 2,419.6	Not Detected to 1.0	31.1
242581	>2419.6	Not Detected to 140	1.0 to 10.8	No Sample
242582	816.4	Not Detected to 1,011.1	Not Detected to 1.0	>2,419.6
242583	>2419.6	Not Detected to 1	Not Detected to 2.0	38.3
250844	7.5	Not Detected	Not Detected	152

Enterococcus have been detected in samples collected from all of the monitoring well locations. The higher concentrations are typically reported in samples collected from down gradient well 242581 and side gradient well 242583. However, a record high concentration of >2,419.6 colonies per 100 milliliters was reported in the sample collected from well 242582 during August 2021.

## SUMMARY

The water levels decreased slightly through January and February 2021, and then increased by an average of 0.54 feet between February and March 2021. The water levels have since decreased by an average of four feet between March and August 2021.

Nitrates were reported within historical ranges in August 2021 and only the concentration in well 242583 exceeded the EPA MCL of 10 ppm. Enterococcus was detected in three wells; however, concentrations remain relatively low compared to historic ranges.

A new record high concentration of chlorides was reported in well 242583 during May 2021 and again in August 2021. However, all concentrations are well below the EPA Secondary Drinking Water Maximum Contaminant Level (MCL) of 250 ppm for chlorides.

New record high concentrations of TDS were reported in wells 242580 and 242583 during August 2021. The EPA maintains a Secondary Drinking Water MCL of 500 ppm for TDS. The TDS concentrations have remained below the 500 ppm secondary standard at all of the well locations since 2013.

Fecal coliform were not reported in any of the samples collected in November 2020, and during the 2021 monitoring events completed to date in 2021. A record high concentration of >2,419.6 colonies per 100 milliliters was reported in the sample collected from well 242582 during August 2021.

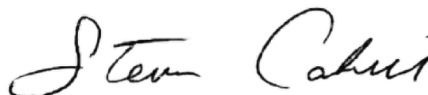
Please contact us if you have any questions.

Very truly yours,

DUFFIELD ASSOCIATES, LLC



Savannah Sipes  
Project Engineer



Steven F. Cahill, P.G.  
Senior Project Manager

SAS/SFC

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Enclosures: Attachment 1 Groundwater Elevation Data and Aerial of Groundwater Flow  
Attachment 2 Laboratory Reports  
Attachment 3 Summary Tables and Graphs of Laboratory Data

cc: Mr. Gerry Desmond – Clean Delaware, LLC

# **ATTACHMENT 1**

## **GROUNDWATER ELEVATION DATA AND AERIAL OF GROUNDWATER FLOW**



**Clean Delaware, LLC, Harbeson Farm Bio-Solids Application Sites  
Summary of Groundwater Elevations in Monitoring Wells**

Casing Elevation (ft):	Well Permit Number and Groundwater Data (feet)									
	242580		242581		242582		242583		250844	
	37.96		38.73		38.62		38.48		36.64	
Date	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE
May-13	10.64	27.32	11.81	26.92	10.34	28.28	10.77	27.71	-	-
Sep-13	10.73	27.23	11.73	27	10.16	28.46	10.89	27.59	-	-
Dec-13	11.46	26.5	12.39	26.34	10.78	27.84	11.33	27.15	-	-
Feb-14	9.83	28.13	10.51	28.22	8.56	30.06	9.73	28.75	-	-
Mar-14	9.96	28	10.74	27.99	8.78	29.84	9.67	28.81	-	-
Apr-14	9.71	28.25	10.51	28.22	8.43	30.19	9.36	29.12	-	-
May-14	10.5	27.46	11.38	27.35	9.58	29.04	10.01	28.47	-	-
Jun-14	11.53	26.43	12.53	26.2	10.96	27.66	11.09	27.39	-	-
Jul-14	11.25	26.71	12.25	26.48	9.77	28.85	10.79	27.69	-	-
Aug-14	11.78	26.18	12.75	25.98	11.15	27.47	11.44	27.04	-	-
Sep-14	12.59	25.37	13.6	25.13	12.21	26.41	12.23	26.25	-	-
Nov-14	12.83	25.13	13.9	24.83	12.55	26.07	12.25	26.23	-	-
Dec-14	11.6	26.36	12.61	26.12	10.78	27.84	11.3	27.18	-	-
Jan-15	11.6	26.36	12.59	26.14	10.97	27.65	11.24	27.24	-	-
Mar-15	9.65	28.31	10.52	28.27	7.8	30.82	9.49	28.99	-	-
May-15	10.65	27.31	11.81	26.92	10.09	28.53	10.19	28.29	-	-
Jun-15	11.47	26.49	12.79	25.94	11.18	27.44	11.08	27.4	14.66	21.98
Jul-15	12.25	25.71	13.79	24.94	12.13	26.49	11.8	26.68	12.46	24.18
Aug-15	12.72	25.24	14.33	24.4	12.74	25.88	12.39	26.09	12.95	23.69
Sep-15	13.28	24.68	14.65	24.08	13.3	25.28	13.35	25.18	13.35	23.29
Nov-15	12.99	24.97	14.28	24.45	13	25.62	13.05	25.43	12.96	23.68
Jan-16	12.18	25.78	13.42	25.31	11.87	26.75	12.07	26.41	12.1	24.54
Feb-16	10.98	26.98	12.14	26.59	10.33	28.92	10.88	27.6	10.95	25.69
Mar-16	10.77	27.19	11.93	26.8	10.24	28.38	10.7	27.78	10.76	25.88
May-16	10.89	27.07	11.9	26.83	9.87	28.75	10.9	27.58	10.78	25.86
Jul-16	12.1	25.86	13.99	24.74	12.5	26.12	12.4	26.08	12.68	23.96
Aug-16	12.71	25.25	14.66	24.07	13.05	25.57	12.96	25.52	13.12	23.52
Sep-16	13.61	24.35	14.9	23.83	13.75	24.87	13.81	24.67	13.48	23.16
Nov-16	9.4	28.56	10.99	27.74	8.9	29.72	9.85	28.63	10.1	26.54

Notes:

DTW = Depth to water in feet from top of well casing

GWE = Groundwater Elevation (feet above mean sea level)

**Clean Delaware, LLC, Harbeson Farm Bio-Solids Application Sites  
Summary of Groundwater Elevations in Monitoring Wells**

Casing Elevation (ft):	Well Permit Number and Groundwater Data (feet)									
	242580		242581		242582		242583		250844	
	37.96		38.73		38.62		38.48		36.64	
Date	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE
Jan-17	11.32	26.64	12.73	26	10.92	27.7	11.6	26.88	11.35	24.29
Feb-17	11.11	26.85	12.46	26.27	10.81	27.81	11.46	27.02	11.19	25.45
Mar-17	11.78	26.16	13.13	25.6	11.77	26.85	12.13	26.35	11.85	24.79
May-17	10.89	27.07	12.01	26.72	9.61	29.01	11.03	27.45	10.7	25.94
Jul-17	12.13	25.85	13.64	25.09	12.25	26.37	12.42	26.06	12.33	24.31
Aug-17	11.89	26.07	13.49	25.24	11.9	26.72	12.25	26.23	12.06	24.58
Sep-17	-	-	13.79	24.94	-	-	-	-	11.48	25.16
Nov-17	12.15	25.81	13.32	25.41	11.85	26.77	12.28	26.2	12.05	24.59
Jan-18	12.82	25.14	14.13	24.6	12.09	26.53	13.2	25.28	12.67	23.97
Feb-18	11.48	26.48	12.77	25.96	10.02	28.6	11.94	26.54	11.28	25.36
Mar-18	11.31	26.65	12.5	26.23	10.93	27.96	11.75	26.73	11.28	25.36
May-18	11.03	26.93	12.36	26.37	10.78	27.84	11.43	27.05	11.12	25.52
Jul-18	10.85	27.11	12.52	26.21	11.01	27.61	11.55	26.93	11.44	25.2
Aug-18	12.27	25.69	14.06	24.67	12.66	25.96	12.7	25.78	12.77	23.87
Sep-18	12.59	25.37	14.41	24.32	12.86	25.76	13.05	25.43	12.95	23.69
Nov-18	8.97	28.99	10.4	28.33	7.55	31.07	9.57	28.91	9.11	27.53
Jan-19	9.22	28.74	10.66	28.07	8.52	30.1	9.76	28.72	9.56	27.08
Feb-19	9.21	28.75	10.61	28.12	8.46	30.16	9.8	28.68	9.49	27.15
Mar-19	8.86	29.1	10.36	28.37	8	30.62	6.44	32.04	6.24	30.4
May-19	11.21	26.75	11.4	27.33	9.72	28.9	10.35	28.13	10.35	26.29
Aug-19	13.4	24.56	NS	NS	13.35	25.27	14.05	24.43	13.15	23.49
Sep-19	13.5	24.46	14.85	23.88	13.69	24.93	14.25	24.23	13.46	23.18
Nov-19	14.3	23.66	15.5	23.23	14.41	24.21	14.74	23.74	14.02	22.62
Jan-20	13.75	24.21	14.99	23.74	13.79	24.83	14.19	24.29	13.5	23.14
Feb-20	12.6	25.36	13.06	25.67	12.22	26.4	13.79	24.69	12.45	25.51
Mar-20	12.9	25.06	14.19	24.54	12.88	25.74	13.23	25.25	12.77	23.87
May-20	11.6	26.36	12.95	25.78	11.25	27.37	11.9	26.58	11.65	24.99
Jul-20	12.87	25.09	14.96	23.77	13.01	25.61	12.29	26.19	13.34	23.30
Aug-20	12.12	25.84	13.80	24.93	11.42	27.20	11.55	26.93	12.30	24.34

Notes:

DTW = Depth to water in feet from top of well casing

GWE = Groundwater Elevation (feet above mean sea level)

**Clean Delaware, LLC, Harbeson Farm Bio-Solids Application Sites  
Summary of Groundwater Elevations in Monitoring Wells**

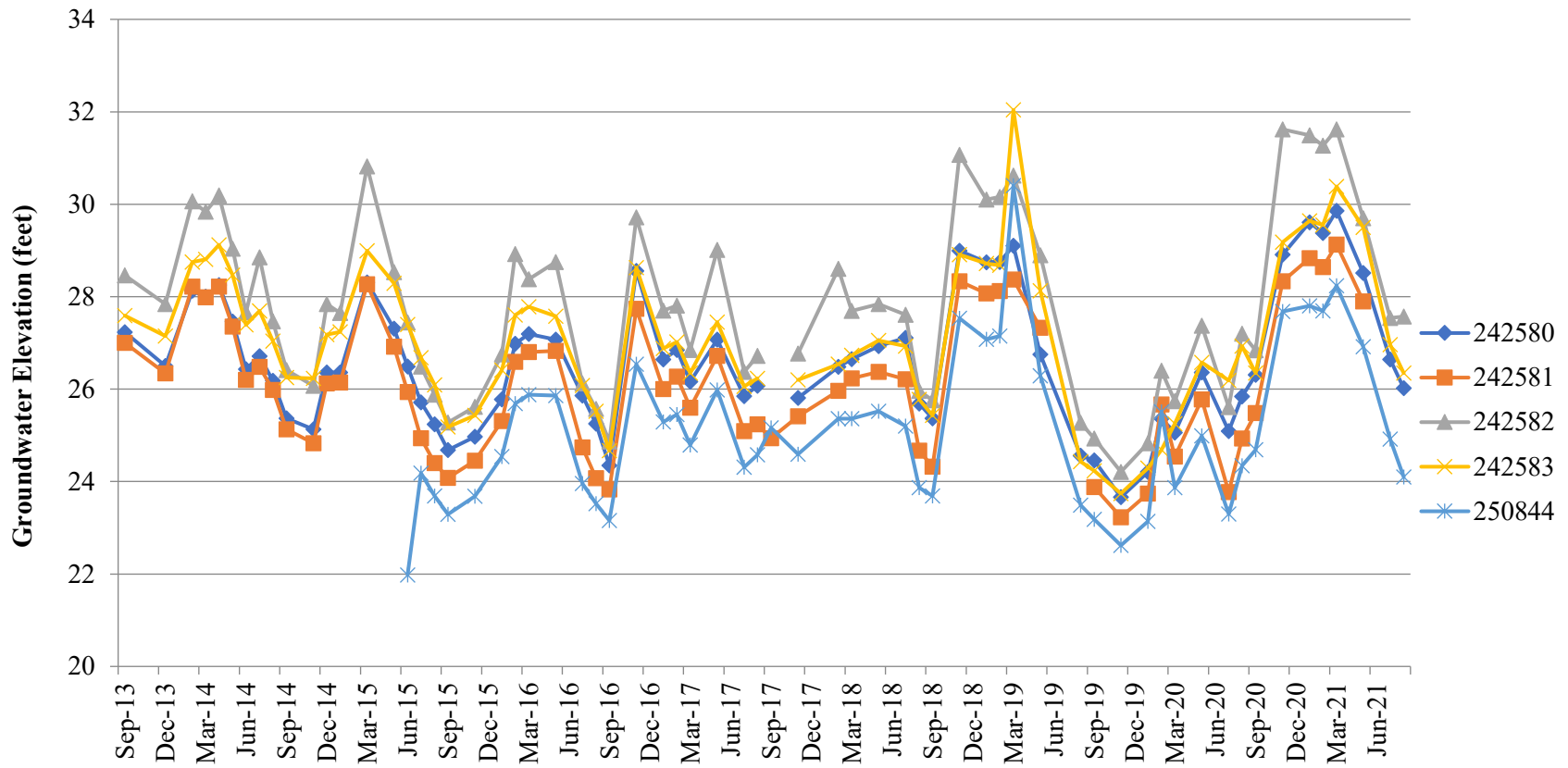
	Well Permit Number and Groundwater Data (feet)									
	242580		242581		242582		242583		250844	
	37.96		38.73		38.62		38.48		36.64	
Casing Elevation (ft):										
Date	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE
Sep-20	11.65	26.31	13.25	25.48	11.78	26.84	12.13	26.35	11.95	24.69
Nov-20	9.05	28.91	10.40	28.33	7.00	31.62	9.30	29.18	8.96	27.68
Jan-21	8.35	29.61	9.90	28.83	7.13	31.49	8.84	29.64	8.84	27.80
Feb-21	8.58	29.38	10.09	28.64	7.35	31.27	8.93	29.55	8.95	27.69
Mar-21	8.10	29.86	9.60	29.13	7.00	31.62	8.10	30.38	8.40	28.24
May-21	9.45	28.51	10.83	27.90	8.92	29.70	8.98	29.50	9.72	26.92
Jul-21	11.32	26.64			11.08	27.54	11.52	26.96	11.72	24.92
Aug-21	11.94	26.02			11.05	27.57	12.13	26.35	12.54	24.10

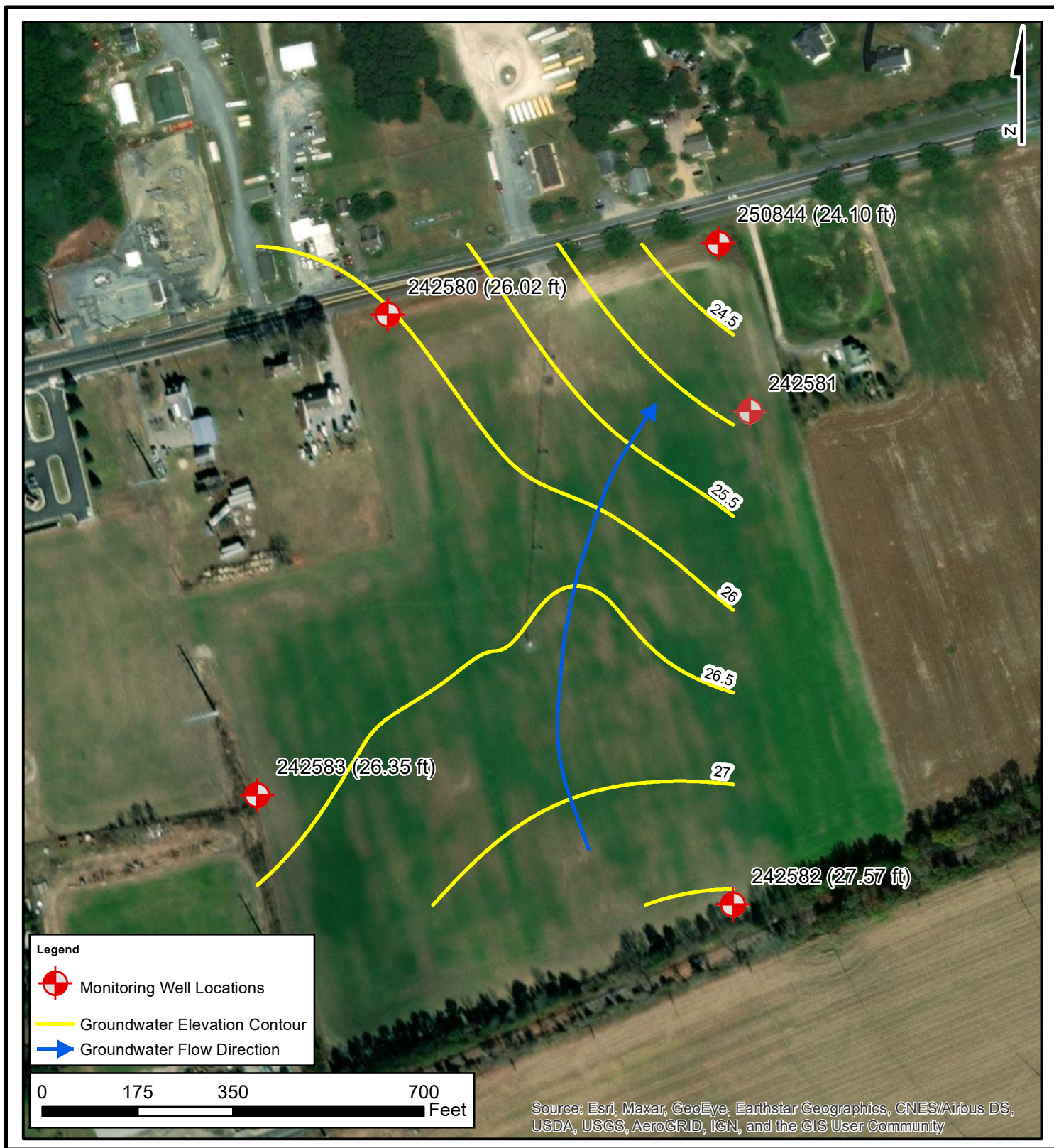
Notes:


DTW = Depth to water in feet from top of well casing

GWE = Groundwater Elevation (feet above mean sea level)

**Harbeson Farm, Groundwater Elevations in Monitor Wells**





Date: 08/2021	<b>GROUNDWATER FLOW SKETCH</b>  <b>Harbeson Farm</b> <b>26526 Lewes Georgetown Highway</b>  HARBESON~SUSSEX COUNTY~DELAWARE	DESIGNED BY: SFC	 <b>DUFFIELD ASSOCIATES</b> Soil, Water & the Environment  5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL. (302)239-6634 FAX (302)239-8485  OFFICES IN PENNSYLVANIA, SOUTHERN DELAWARE, MARYLAND AND NEW JERSEY  EMAIL: DUFFIELD@DUFFNET.COM
SCALE: AS SHOWN		DRAWN BY: SAS	
PROJECT NO. 11191.EB		CHECKED BY: SFC	
SHEET: ATTACHMENT 1		FILE: 11191.EB.GW_Flow_Sketch.mxd	

# **ATTACHMENT 2**

## **LABORATORY REPORTS**





**ENVIROCORP LABORATORIES INC.**

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
[www.envirocorplabs.com](http://www.envirocorplabs.com)

**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**



August 25, 2021

Steve Cahill  
Duffield Associates, Inc.  
5400 Limestone Rd  
Wilmington, DE 19808

RE: Harbeson Farm

Enclosed are the results of analyses for samples received by our laboratory on 8/12/2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Shelly Bloom  
Supervising Analyst

## Table of Contents

Cover Letter	1
Samples in Report	3
Sample Results	4
Qualifiers and Definitions	8
Chain of Custody PDF	9

**ENVIROCORP LABORATORIES INC.**

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
www.envirocorplabs.com

**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

5400 Limestone Rd

Wilmington, DE 19808

**Project:** Harbeson Farm**Project Number:** Harbeson Farm**Reported:** 08/25/2021 15:21

## Sample Summary

Lab ID	Sample	Matrix	Sampled	Received
2108002-01	242580	Ground Water	8/12/2021 9:06	08/12/21 13:46
2108002-02	242582	Ground Water	8/12/2021 10:08	08/12/21 13:46
2108002-03	242583	Ground Water	8/12/2021 9:30	08/12/21 13:46
2108002-04	250844	Ground Water	8/12/2021 11:02	08/12/21 13:46



# ENVIROCORP LABORATORIES INC.

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
www.envirocorplabs.com



**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Harbeson Farm

5400 Limestone Rd

**Project Number:** Harbeson Farm

Wilmington, DE 19808

**Reported:** 08/25/2021 15:21

## Analytical Results

**Sample ID:** 242580 **Sample Start:** 08/12/21 09:06  
**Lab ID:** 2108002-01  
**Matrix:** Ground Water  
**Sample Type:** Grab **Received:** 08/12/21 13:46

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/12/21 16:20	8/13/21 15:18	HJG3
Enterococcus	31.1	#/100 mL	1		Enterolert	8/12/21 15:23	8/13/21 15:47	HJG3
Total Coliform	8	#/100 mL	2		SM9222-B	8/12/21 16:19	8/13/21 15:12	HJG3

### Inorganic

Chloride	23.0	mg/L	1.50		EPA 300.0	8/13/21 15:44	8/13/21 15:44	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/24/21 9:56	8/24/21 11:34	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/13/21 15:44	8/13/21 15:44	MEM
Nitrate as N	8.38	mg/L	0.60		EPA 300.0	8/13/21 15:44	8/13/21 15:44	MEM
Total Dissolved Solids	405	mg/L	12.5		SM2540-C	8/13/21 11:42	8/17/21 16:33	TAS
Total Kjeldahl Nitrogen	0.56	mg/L	0.05		SM4500-Norg-C	8/25/21 11:38	8/25/21 12:57	CK
Total Nitrogen as N	8.93	mg/L	0.0500		[CALC]	8/25/21 11:38	8/25/21 12:57	CK
Total Phosphorus as P	0.18	mg/L	0.05		SM4500-P-F	8/25/21 11:39	8/25/21 13:01	CK

### Metals

Sodium	18.4	mg/L	0.0100		EPA 200.7	8/19/21 8:00	8/19/21 10:39	JMW
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# ENVIROCORP LABORATORIES INC.

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302-398-4313  
www.envirocorplabs.com



**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Harbeson Farm

5400 Limestone Rd

**Project Number:** Harbeson Farm

Wilmington, DE 19808

**Reported:** 08/25/2021 15:21

## Analytical Results

**Sample ID:** 242582 **Sample Start:** 08/12/21 10:08  
**Lab ID:** 2108002-02  
**Matrix:** Ground Water  
**Sample Type:** Grab **Received:** 08/12/21 13:46

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/12/21 16:20	8/13/21 15:18	HJG3
Enterococcus	>2419.6	#/100 mL	1		Enterolert	8/12/21 15:23	8/13/21 15:47	HJG3
Total Coliform	ND	#/100 mL	2		SM9222-B	8/12/21 16:19	8/13/21 15:12	HJG3

### Inorganic

Chloride	9.07	mg/L	0.50		EPA 300.0	8/13/21 16:05	8/13/21 16:05	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/24/21 9:56	8/24/21 11:34	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/13/21 16:05	8/13/21 16:05	MEM
Nitrate as N	4.08	mg/L	0.20		EPA 300.0	8/13/21 16:05	8/13/21 16:05	MEM
Total Dissolved Solids	180	mg/L	12.5		SM2540-C	8/13/21 11:42	8/17/21 16:33	TAS
Total Kjeldahl Nitrogen	0.34	mg/L	0.05		SM4500-Norg-C	8/25/21 11:38	8/25/21 12:57	CK
Total Nitrogen as N	4.42	mg/L	0.0500		[CALC]	8/25/21 11:38	8/25/21 12:57	CK
Total Phosphorus as P	0.19	mg/L	0.05		SM4500-P-F	8/25/21 11:39	8/25/21 13:01	CK

### Metals

Sodium	3.37	mg/L	0.0100		EPA 200.7	8/19/21 8:00	8/19/21 10:42	JMW
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# ENVIROCORP LABORATORIES INC.

51 CLARK STREET, HARRINGTON, DE 19952  
302-398-4313  
www.envirocorplabs.com



**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Harbeson Farm

5400 Limestone Rd

**Project Number:** Harbeson Farm

Wilmington, DE 19808

**Reported:** 08/25/2021 15:21

## Analytical Results

**Sample ID:** 242583 **Sample Start:** 08/12/21 09:30  
**Lab ID:** 2108002-03  
**Matrix:** Ground Water  
**Sample Type:** Grab **Received:** 08/12/21 13:46

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
<b>Microbiology</b>								
Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/12/21 16:20	8/13/21 15:18	HJG3
Enterococcus	38.3	#/100 mL	1		Enterolert	8/12/21 15:23	8/13/21 15:47	HJG3
Total Coliform	150	#/100 mL	2		SM9222-B	8/12/21 16:19	8/13/21 15:12	HJG3
<b>Inorganic</b>								
Chloride	72.8	mg/L	1.50		EPA 300.0	8/13/21 16:27	8/13/21 16:27	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/24/21 9:56	8/24/21 11:34	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/13/21 16:27	8/13/21 16:27	MEM
Nitrate as N	13.4	mg/L	0.60		EPA 300.0	8/13/21 16:27	8/13/21 16:27	MEM
Total Dissolved Solids	462	mg/L	12.5		SM2540-C	8/13/21 11:42	8/17/21 16:33	TAS
Total Kjeldahl Nitrogen	0.34	mg/L	0.05		SM4500-Norg-C	8/25/21 11:38	8/25/21 12:57	CK
Total Nitrogen as N	13.7	mg/L	0.0500		[CALC]	8/25/21 11:38	8/25/21 12:57	CK
Total Phosphorus as P	ND	mg/L	0.05		SM4500-P-F	8/25/21 11:39	8/25/21 13:01	CK
<b>Metals</b>								
Sodium	7.25	mg/L	0.0100		EPA 200.7	8/19/21 8:00	8/19/21 10:46	JMW





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**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**

Duffield Associates, Inc.

**Project:** Harbeson Farm

5400 Limestone Rd

**Project Number:** Harbeson Farm

Wilmington, DE 19808

**Reported:** 08/25/2021 15:21

## Analytical Results

**Sample ID:** 250844  
**Lab ID:** 2108002-04  
**Matrix:** Ground Water  
**Sample Type:** Grab

**Sample Start:** 08/12/21 11:02

**Received:** 08/12/21 13:46

Analyte	Result	Units	Reporting Limit	Qualifier	Method	Date Prepared	Date Analyzed	Analyst
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### Microbiology

Fecal Coliform	ND	#/100 mL	2		SM9222-D	8/12/21 16:20	8/13/21 15:18	HJG3
Enterococcus	1	#/100 mL	1		Enterolert	8/12/21 15:23	8/13/21 15:47	HJG3
Total Coliform	152	#/100 mL	2		SM9222-B	8/12/21 16:19	8/13/21 15:12	HJG3

### Inorganic

Chloride	3.80	mg/L	0.50		EPA 300.0	8/13/21 16:48	8/13/21 16:48	MEM
Ammonia as N	ND	mg/L	0.05		SM4500-NH3-G	8/24/21 9:56	8/24/21 11:34	CK
Nitrite as N	ND	mg/L	0.10		EPA 300.0	8/13/21 16:48	8/13/21 16:48	MEM
Nitrate as N	1.78	mg/L	0.20		EPA 300.0	8/13/21 16:48	8/13/21 16:48	MEM
Total Dissolved Solids	158	mg/L	12.5		SM2540-C	8/13/21 11:42	8/17/21 16:33	TAS
Total Kjeldahl Nitrogen	0.15	mg/L	0.05		SM4500-Norg-C	8/25/21 11:38	8/25/21 12:57	CK
Total Nitrogen as N	1.93	mg/L	0.0500		[CALC]	8/25/21 11:38	8/25/21 12:57	CK
Total Phosphorus as P	ND	mg/L	0.05		SM4500-P-F	8/25/21 11:39	8/25/21 13:01	CK

### Metals

Sodium	4.57	mg/L	0.0100		EPA 200.7	8/19/21 8:00	8/19/21 10:49	JMW
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**ENVIROCORP LABORATORIES INC.**

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302-398-4313  
www.envirocorplabs.com

**ANALYTICAL SERVICES: NPDES, RCRA, GROUND WATER**



Duffield Associates, Inc.

5400 Limestone Rd

Wilmington, DE 19808

**Project:** Harbeson Farm

**Project Number:** Harbeson Farm

**Reported:** 08/25/2021 15:21

## Notes and Definitions

Item	Definition
<b>Z</b>	>2419.6
<b>Dry-WT</b>	Sample results reported on a dry weight basis.
<b>ND</b>	Analyte NOT DETECTED at or above the reporting limit.
<b>Reporting Limit</b>	Lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

<b>Client Name</b>	Duffield Associates, Inc.
<b>Contact</b>	Steven Cahill
<b>Address</b>	5400 Limestone Rd. Wilmington, DE 199808
<b>Phone</b>	302-239-6634
<b>Fax</b>	302-239-8485
<b>Email</b>	Scahill@duffnet.com



2108002

Duffield Associates, Inc.

Harbeson Farm

**Client Name** Duffield Associates, Inc.  
**Contact** Steven Cahill  
**Address** 5400 Limestone Rd.  
Wilmington, DE 199808  
**Phone** 302-239-6634  
**Fax** 302-239-8485  
**Email** Scahill@duffnet.com

**2108002**  
Duffield Associates, Inc.  
Harbeson Farm

Lab I.D. (Lab use only)	Sample Description/Location	Sample Date	Time	Matrix
Harbeson Farm				
242580		8/12/21	0906	GW
242582		8/12/21	1008	GW
242583		8/12/21	0930	GW
250844		8/12/21	1102	GW

Page 9 of 9

Oil=Oil (1 Inpreserved) M=Metals (HNO3), N/P=Nutrients (H2SO4), Bacti=P/A Colilert® (Sodium Thiosulfate), OG=Oil & Grease (HCL)

Received by R. Burns Date 8/12 Time 1340

Sampled by SAS AGF Date 8/12/21 Time 1346

Relinquished by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_  
Received by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

**ATTACHMENT 3**

**SUMMARY TABLES  
AND  
GRAPHS OF LABORATORY DATA**

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242580**

Parameters	May/June 2013	Sept 2013	Dec 2013	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014
Groundwater Elevation (ft)	27.32	27.23	26.5	28.13	28	28.25	27.46	26.43	26.71
pH	6.7	6.2	7.16	6.13	6.01	6.44	6.51	5.97	6.02
Conductivity (umhos)	176	-	141.6	128.5	120	117.7	118	117.7	126.5
Temperature (Celsius)	13.4	20.5	15.2	10.8	10.3	10.8	13.5	15.6	16.5
Dissolved Oxygen (Mg/L)	-	-	-	3.96	7.9	5.38	4.11	4.43	3.17
Total Dissolved Solids	88	-	-	230	137	150	129	206	190
Nitrates (Mg/L)	7.7	13.5	9.69	15.9	14.5	14.4	14.2	12.6	16.3
Ammonia Nitrogen	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	-	15	-	15.9	14.5	14.4	14.2	12.6	16.3
Total Phosphorus	-	ND	-	0.183	0.102	0.121	<0.05	<0.05	<0.05
Chlorides	-	-	-	14.5	13.9	14.9	13.2	12.2	13.1
Sodium	-	-	-	6.85	6.53	6.72	5.93	5.39	5.83
Fecal Coliform (col/100 ml)	ND	-	-	<1.8	-	-	<2	-	-
Enterococcus (MPN/100 ml)	-	-	-	2	-	-	<1	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.
4. NR = No Reading taken

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242580**

Parameters	Aug 2014	Sept 2014	Dec 2014	March 2015	June 2015	Aug 2015	Nov 2015	Feb 2016	May 2016
Groundwater Elevation (ft)	26.18	25.37	26.36	28.31	26.49	25.24	24.97	26.98	27.07
pH	6.95	6.86	7.08	7	6.91	6.96	6.05	6.22	5.99
Conductivity (umhos)	140.9	133.4	148.1	113.5	128.3	160.1	242	151	340
Temperature (Celsius)	18.1	18.2	14.8	10.4	14.4	17.1	17.27	11.69	12.63
Dissolved Oxygen (Mg/L)	3.96	3.77	3.97	3.9	4.75	3.76	4.64	6.06	2.95
Total Dissolved Solids	308	348	127	108	150	160	124	158	342
Nitrates (Mg/L)	14.1	16.6	15.3	8.53	6.17	17.2	20.4	8.96	6.45
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	14.1	16.6	15.3	8.53	6.17	17.2	20.4	8.96	6.68
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	0.0788	0.0642	0.056	0.0851	0.0672
Chlorides	16.1	14.5	16.7	10.9	24	22.1	23.1	12.3	115
Sodium	6.55	6.78	6.6	5.79	10.4	9.14	10.4	14.4	42.2
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	<1.8	<1.8	<1.8	<1.8	-	<1.8
Enterococcus (MPN/100 ml)	<1	-	<1	<1	1	1	<1	-	<1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.
4. NR = No Reading taken



Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242580**

Parameters	Aug 2016	Nov 2016	Feb 2017	May 2017	Aug 2017	Nov 2017	Feb 2018	May 2018	Aug 2018
Groundwater Elevation (ft)	25.25	28.76	26.85	27.07	26.07	25.81	26.48	26.93	25.69
pH	6.7	5.92	6.67	5.72	7.05	6.45	-	7.04	6.36
Conductivity (umhos)	227	58	121	188	173	145	242	111	113
Temperature (Celsius)	16.41	19.1	11.71	14.1	20.6	15.99	12.93	21.4	19.2
Dissolved Oxygen (Mg/L)	5.93	-	8.79	-	4.21	3.57	-	-	-
Total Dissolved Solids	148	125	105	191	191	76	322	108	134
Nitrates (Mg/L)	9.21	1.49	2.48	3.11	5.75	6.7	3.47	4.63	6.63
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05
Total Nitrogen	9.21	1.49	2.48	3.11	5.75	6.7	4.21	4.88	6.72
Total Phosphorus	<0.05	0.142	0.0678	0.0996	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorides	28.7	6.25	7.63	72.5	12.9	8.54	93.7	20.3	12.9
Sodium	13.3	9.52	5.93	19.5	10.5	9.17	22.2	42.9	15
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	<1	<1	1	8.3	<1	-	<2.0	<1.0	<1.0

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.
4. NR = No Reading taken

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242580**

Parameters	Nov 2018	Feb 2019	May 2019	Aug 2019	Nov 2019	Feb 2020	May 2020	Aug 2020	Nov 2020
Groundwater Elevation (ft)	28.99	28.75	26.75	24.56	23.66	25.36	26.36	25.48	28.91
pH	5.68	6.33	5.96	5.31	6.25	6.26	7.8	7.04	7.66
Conductivity (umhos)	129	134	158	88	144	142	137	157	90
Temperature (Celsius)	14.97	15.34	17.54	19.92	15.13	9.43	18.14	25.83	13.05
Dissolved Oxygen (Mg/L)	4.24	6.95	8	3.38	2.96	2.17	2.12	7.11	5
Total Dissolved Solids	104	124	116	156	106	114	124	126	155
Nitrates (Mg/L)	3.87	4.21	2.97	7.8	6.36	6.09	3.68	5.04	3.26
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	4.06	4.39	3.18	8.26	6.36	6.27	3.77	5.15	3.44
Total Phosphorus	<0.05	<0.05	<0.05	0.103	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorides	12.7	14.1	22	15.3	12.7	13.5	10	11.3	8.42
Sodium	25.9	12.6	13.9	6.46	5.89	15.2	6.23	6.01	14.5
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	<1.0	<1.0	-	<1	88.6	<1.0	<1.0	>2,419.6	9.6

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.
4. NR = No Reading taken

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242580**

<b>Parameters</b>	<b>Feb 2021</b>	<b>May 2021</b>	<b>Aug 2021</b>
<b>Groundwater Elevation (ft)</b>	29.38	28.51	26.02
<b>pH</b>	8.00	8.05	7.22
<b>Conductivity (umhos)</b>	133	240	223
<b>Temperature (Celsius)</b>	11.59	13.06	21.18
<b>Dissolved Oxygen (Mg/L)</b>	1.98	0.28	0.09
<b>Total Dissolved Solids</b>	128	252	405
<b>Nitrates (Mg/L)</b>	4.10	6.20	8.38
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05
<b>Total Nitrogen</b>	4.26	6.42	8.93
<b>Total Phosphorus</b>	0.08	<0.05	0.18
<b>Chlorides</b>	9.25	53.5	23
<b>Sodium</b>	5.44	29.8	18.4
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	<1.0	1.0	31.1

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**
- 4. NR = No Reading taken**

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242581**

Parameters	May/June 2013	Sept 2013	Dec 2013	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014
Groundwater Elevation (ft)	26.92	27	26.34	28.22	27.99	28.22	27.35	26.2	26.48
pH	6.4	5.9	6.37	5.67	5.97	6.02	6	6.03	5.98
Conductivity (umhos)	699	-	379.5	183.8	189.7	346.5	320.6	331.6	280.2
Temperature (Celsius)	13.6	18.2	14.3	11.2	9.9	10.3	12.4	14.6	15.2
Dissolved Oxygen (Mg/L)	-	-	-	5.88	7.32	2.67	2.21	2.06	5.15
Total Dissolved Solids	704	-	-	483	362	396	386	176	429
Nitrates (Mg/L)	46.9	61.8	54.6	62.8	57.8	51.1	56.5	48	60
Ammonia Nitrogen	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	-	63	-	62.8	57.8	51.1	56.5	48	60
Total Phosphorus	-	0.16	-	0.51	0.0824	0.595	0.524	0.557	0.692
Chlorides	-	-	-	64	57.3	52.9	52.4	45.2	60.1
Sodium	-	-	-	28.8	27.2	24.3	23.9	23.8	27.9
Fecal Coliform (col/100 ml)	ND	-	-	<1.8	-	-	<2	-	-
Enterococcus (MPN/100 ml)	-	-	-	90.5	-	-	21	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242581**

Parameters	Aug 2014	Sept 2014	Nov 2014	Jan 2015	March 2015	May 2015	July 2015	Sept 2015	Nov 2015
Groundwater Elevation (ft)	25.98	25.13	24.83	26.14	28.27	26.92	24.94	24.08	24.45
pH	6.13	6.74	6.8	6.85	6.88	6.9	6.91	6.93	5.85
Conductivity (umhos)	254.6	319	379.7	305.6	383.1	295.7	304.5	350.7	448
Temperature (Celsius)	16.1	16.6	16.3	13.2	10.3	11.3	14.6	16.4	16.45
Dissolved Oxygen (Mg/L)	5.52	4.9	3.87	1.82	5.47	2.09	4.19	3.97	2.39
Total Dissolved Solids	430	493	388	480	340	328	280	398	298
Nitrates (Mg/L)	42.9	49.2	56.5	41.4	56.4	39.8	41.7	55.2	46.6
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	42.9	49.2	56.5	41.4	56.4	39.8	41.7	55.2	46.6
Total Phosphorus	0.637	0.52	0.31	0.97	0.501	0.669	0.448	0.18	0.167
Chlorides	47.9	53.3	61.3	45.1	62.7	43.4	44.7	52.3	49.1
Sodium	26.4	27.3	30.3	22.2	29.8	20.7	24.5	39.1	27.7
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	-	<1.8	-	-	<1.8	<1.8
Enterococcus (MPN/100 ml)	24.9	-	10.8	-	2	-	-	>2419.6	4.1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242581**

Parameters	Jan 2016	March 2016	May 2016	July 2016	Sept 2016	Nov 2016	Jan 2017	March 2017	May 2017
Groundwater Elevation (ft)	25.31	26.8	26.83	24.74	24.07	27.74	26	25.6	26.72
pH	6.37	6.15	5.89	5.86	5.75	5.21	7.21	7.14	5.22
Conductivity (umhos)	442	349	397	461	486	255	465	474	291
Temperature (Celsius)	13.36	12.11	12.11	16.14	16.8	18.2	13.71	10	13.4
Dissolved Oxygen (Mg/L)	2.84	2.06	2.14	4.51	7.8	-	7.14	7.98	-
Total Dissolved Solids	333	335	260	293	360	336	273	247	351
Nitrates (Mg/L)	49.6	32.4	33	37.1	45.9	41	22.1	32.6	35.1
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	49.6	32.4	33	37.1	45.9	41	22.2	32.6	35.1
Total Phosphorus	0.199	0.853	0.486	0.176	0.172	0.319	0.187	<0.05	0.23
Chlorides	47	34	36.9	37.8	46.1	43.4	34.5	35.3	43.4
Sodium	28.5	23.1	22.2	21.3	90.9	26.5	22.7	22.1	23.8
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<1.8	2	4.5	46	<1.8	<1.8
Enterococcus (MPN/100 ml)	13.2	44.1	12.1	66.3	66.3	145	72.7	16.6	42.8

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.



Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242581**

Parameters	July 2017	Sept 2017	Nov 2017	Jan 2018	March 2018	May 2018	July 2018	Sept 2018	Nov 2018
Groundwater Elevation (ft)	25.09	24.94	25.41	24.6	26.23	26.37	24.21	24.32	28.33
pH	7.01	6.34	5.99	6.49	6.4	6.65	6.19	5.54	4.98
Conductivity (umhos)	499	522	508	529	321	245	269	296	447
Temperature (Celsius)	19.01	19.44	14.11	13.19	13.5	22.3	21.7	22.1	13.84
Dissolved Oxygen (Mg/L)	8	-	5.11	4.46	-	-	-	-	3.32
Total Dissolved Solids	293	380	343	382	258	274	260	431	354
Nitrates (Mg/L)	32.3	43.1	43.1	29.2	23.6	21	19	28.6	29.8
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	32.3	43.1	43.1	29.6	24	21.3	19.4	28.9	30.2
Total Phosphorus	0.199	0.199	0.254	<0.05	<0.05	<0.05	0.06	<0.05	0.07
Chlorides	43	45.6	43.9	50.9	42.5	41.7	36.9	49.4	47.8
Sodium	24.3	26.9	24.7	36.7	34.6	36.3	19.1	40.2	47.6
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	-	22.1	-	-	<2.0	1	-	<1.0	1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242581**

Parameters	Jan 2019	March 2019	May 2019	Sept 2019	Nov 2019	Jan 2020	March 2020	May 2020	July 2020
Groundwater Elevation (ft)	28.12	28.37	27.33	23.88	23.23	23.74	25.54	25.78	23.77
pH	5.98	6.43	5.39	5.1	6.53	6.75	7.16	7.26	7.67
Conductivity (umhos)	545	408	438	471	470	440	373	188	417
Temperature (Celsius)	9.85	9.71	13.6	17.18	15.66	11.77	16.74	20.63	19.27
Dissolved Oxygen (Mg/L)	5.68	8.76	8.41	6.65	1.33	10.69	4.42	1.61	8.84
Total Dissolved Solids	288	266	386	402	336	320	266	268	314
Nitrates (Mg/L)	20.7	22.7	25.4	27.9	27.2	24.2	19	17.8	20.3
Ammonia Nitrogen	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	21.1	23.9	25.7	28.4	27.2	24.8	19.4	18.1	20.8
Total Phosphorus	<0.05	0.1	0.27	0.067	<0.05	0.087	<0.05	0.1	0.2
Chlorides	42.8	45.3	49.5	53.4	49.3	48.2	43.8	38.4	63.1
Sodium	24.8	25.9	27.7	27.6	23.6	30.9	22.2	16.7	20
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	2	44.1	-	1	140	2	1	1	5.2

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242581**

<b>Parameters</b>	<b>Sept 2020</b>	<b>Nov 2020</b>	<b>Jan 2021</b>	<b>March 2021</b>	<b>May 2021</b>
<b>Groundwater Elevation (ft)</b>	25.48	28.33	28.64	29.13	27.9
<b>pH</b>	6.11	6.14	5.75	8.4	7.3
<b>Conductivity (umhos)</b>	371	453	393	436	353
<b>Temperature (Celsius)</b>	18.07	12.55	11.44	10.89	13.47
<b>Dissolved Oxygen (Mg/L)</b>	0.88	2.42	1.24	3.36	0.45
<b>Total Dissolved Solids</b>	300	360	290	338	270
<b>Nitrates (Mg/L)</b>	18.9	25.2	18.2	20	15.5
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05	<0.05	<0.05
<b>Total Nitrogen</b>	19.2	25.6	18.5	20.5	15.9
<b>Total Phosphorus</b>	0.07	0.05	0.08	<0.05	0.11
<b>Chlorides</b>	47.7	46.4	40.7	46.4	36.8
<b>Sodium</b>	24.9	27.3	22.9	23.9	24.6
<b>Fecal Coliform (col/100 ml)</b>	18	<2.0	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	70.8	24.1	1	10.8	4.1

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242582**

<b>Parameters</b>	<b>May/June 2013</b>	<b>Sept 2013</b>	<b>Dec 2013</b>	<b>Feb 2014</b>	<b>March 2014</b>	<b>April 2014</b>	<b>May 2014</b>	<b>June 2014</b>	<b>July 2014</b>
<b>Groundwater Elevation (ft)</b>	28.28	28.46	27.84	30.06	29.84	30.19	29.04	27.66	28.85
<b>pH</b>	6.7	5.2	6.99	4.58	6.03	6.1	6.04	6.11	5.97
<b>Conductivity (umhos)</b>	900	-	340.8	332.7	195.2	227.9	234.1	248.8	244.8
<b>Temperature (C)</b>	13.9	20.4	14.9	11.3	9.1	9.3	11.5	13.5	14.5
<b>Dissolved Oxygen (Mg/L)</b>	-	-	-	3.05	4.76	5.19	5.46	5.07	4.8
<b>Total Dissolved Solids</b>	770	-	-	332	240	282	280	438	325
<b>Nitrates (Mg/L)</b>	101	57.2	72.3	71.4	58.1	52.6	53.3	53.8	52.1
<b>Ammonia Nitrogen</b>	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
<b>Total Nitrogen</b>	-	58	-	71.4	58.1	52.6	53.3	53.8	52.1
<b>Total Phosphorus</b>	-	ND	-	0.579	0.426	0.269	0.276	0.29	0.447
<b>Chlorides</b>	-	-	-	13.9	13.1	11.8	11.8	12.1	11.7
<b>Sodium</b>	-	-	-	8.98	9.09	7.86	7.79	8.49	8.8
<b>Fecal Coliform (col/100 ml)</b>	ND	-	-	<1.8	-	-	<2	-	-
<b>Enterococcus (MPN/100 ml)</b>	-	-	-	1	-	-	5	-	-

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242582**

Parameters	Aug 2014	Sept 2014	Dec 2014	March 2015	June 2015	Aug 2015	Nov 2015	Feb 2016	May 2016
Groundwater Elevation (ft)	27.47	26.41	27.84	30.82	27.44	25.88	25.62	28.92	28.75
pH	5.96	6.05	6.31	6.95	6.97	6.97	5.81	5.7	5.76
Conductivity (umhos)	213.1	254.8	255.1	207.3	178.2	156.3	305	238	179
Temperature (C)	16.3	16.5	14	9.1	12.7	15.2	16.27	11.36	11.32
Dissolved Oxygen (Mg/L)	4.65	4.02	1.13	4.88	3.91	3.83	2.55	1.07	0.95
Total Dissolved Solids	424	403	265	157	195	290	185	217	155
Nitrates (Mg/L)	42	52.4	52.4	35.8	30.9	39.3	35.4	19.3	18.2
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	42	52.6	52.4	35.8	30.9	39.3	35.4	19.3	18.5
Total Phosphorus	0.563	0.717	0.215	0.44	0.83	1.31	0.738	0.64	0.289
Chlorides	37	11.7	12.3	8.83	8.08	10.2	9.75	8.23	6.95
Sodium	9.24	9.24	9.35	6.81	7.1	7.86	8.44	6.79	5.91
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	<1.8	<1.8	<1.8	<1.8	-	-
Enterococcus (MPN/100 ml)	9.8	-	4.1	3.1	16	60.5	1	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242582**

Parameters	Aug 2016	Nov 2016	Feb 2017	May 2017	Aug 2017	Nov 2017	Feb 2018	May 2018	Aug 2018
Groundwater Elevation (ft)	25.57	29.72	27.81	29.01	26.72	26.77	28.6	27.84	25.96
pH	6.62	4.87	7.55	7.55	6.26	6.16	-	6.37	5.65
Conductivity (umhos)	236	129	232	232	186	224	541	150	141
Temperature (C)	15.29	17.1	11.33	11.33	18.25	14.98	12.58	22.1	19.8
Dissolved Oxygen (Mg/L)	2.19	-	7.06	7.06	3.12	4.31	-	-	-
Total Dissolved Solids	335	122	133	96	122	136	130	130	140
Nitrates (Mg/L)	22.3	8.81	7.76	7.61	7.53	9.1	8.33	8.55	8.24
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05
Total Nitrogen	22.3	8.81	7.76	7.61	7.53	9.1	8.67	8.94	8.46
Total Phosphorus	1.26	0.237	0.469	0.291	0.431	0.464	0.05	<0.05	<0.05
Chlorides	6.67	4.4	4.26	<10	5.19	6.01	6.92	9.23	7
Sodium	6.13	4.96	4.29	3.6	3.84	4.59	4.2	6.7	7
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	17.5	3.1	1	<1	816.4	5.1	<2.0	1	4.1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242582**

<b>Parameters</b>	<b>Nov 2018</b>	<b>Feb 2019</b>	<b>May 2019</b>	<b>August 2019</b>	<b>Nov 2019</b>	<b>Feb 2020</b>	<b>May 2020</b>	<b>August 2020</b>	<b>Nov 2020</b>
<b>Groundwater Elevation (ft)</b>	31.07	30.16	28.9	25.27	24.21	26.4	27.37	27.2	31.62
<b>pH</b>	4.83	6.13	6.67	5.38	6.26	5.97	7.18	6.81	6.22
<b>Conductivity (umhos)</b>	146	117	110	121	134	141	139	127	139
<b>Temperature (C)</b>	13.94	12.94	16.56	19.52	14.78	8.44	16.83	20.36	14.12
<b>Dissolved Oxygen (Mg/L)</b>	4.89	6.86	9.84	2.67	2.39	1.62	2.14	5.63	2.45
<b>Total Dissolved Solids</b>	96	94	92	96	96	100	106	90	158
<b>Nitrates (Mg/L)</b>	5.28	3.28	2.88	3.62	5.01	5.8	4.74	5.26	6.31
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>Total Nitrogen</b>	5.53	3.43	3.03	3.9	5.01	6	4.89	5.46	6.45
<b>Total Phosphorus</b>	0.07	<0.05	0.08	<0.05	0.155	<0.05	<0.05	<0.05	<0.05
<b>Chlorides</b>	7.39	7.25	6.56	5.07	6.77	7.3	4.9	8.14	11.6
<b>Sodium</b>	6.2	4.5	3.3	3.44	3.44	4.65	2.25	1.06	4.97
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	1	<1.0	NS	1011.1	<2.0	<1.0	4.1	38.5	14.6

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**



Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242582**

<b>Parameters</b>	<b>Feb 2021</b>	<b>May 2021</b>	<b>August 2021</b>
<b>Groundwater Elevation (ft)</b>	31.27	29.70	27.57
<b>pH</b>	8.15	8.1	6.97
<b>Conductivity (umhos)</b>	113	105	102
<b>Temperature (C)</b>	9.1	11.27	19.49
<b>Dissolved Oxygen (Mg/L)</b>	0.65	0.30	0.60
<b>Total Dissolved Solids</b>	118	120	180
<b>Nitrates (Mg/L)</b>	3.9	2.73	4.08
<b>Ammonia Nitrogen</b>	<0.05	<0.05	<0.05
<b>Total Nitrogen</b>	4.04	2.91	4.42
<b>Total Phosphorus</b>	<0.05	0.06	0.19
<b>Chlorides</b>	11.4	8.72	9.07
<b>Sodium</b>	3.1	2.91	3.37
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	<1.0	1.0	>2,419.6

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242583**

Parameters	May/ June 2013	Sept 2013	Dec 2013	Feb 2014	March 2014	April 2014	May 2014	June 2014	July 2014
Groundwater Elevation (ft)	27.71	27.59	27.15	28.75	28.81	29.12	28.47	27.39	27.69
pH	5.1	5.6	6.15	5.71	6.02	6.01	6.91	6.24	6.55
Conductivity (umhos)	350	-	109.2	101.9	101.5	98.2	98.5	104.3	109.9
Temperature (Celsius)	15.8	18.7	14.8	12.3	10	10.4	12	14.3	15.4
Dissolved Oxygen	-	-	-	3.73	4.43	4.34	4.5	4.02	3.28
Total Dissolved Solids	268	-	-	123	91	<100	130	438	159
Nitrates	28.7	13.2	7.76	8.49	9.1	8.97	9.31	14.4	15.9
Ammonia Nitrogen	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	-	14	-	8.49	9.1	8.97	9.31	14.4	15.9
Total Phosphorus	-	ND	-	<0.05	<0.05	0.0536	0.058	0.0557	<0.05
Chlorides	-	-	-	15.8	14	13.1	13.6	14.3	13.6
Sodium	-	-	-	5.44	5.05	5.06	5.23	5.47	5.25
Fecal Coliform (col/100 ml)	ND	-	-	<1.8	-	-	<2	-	-
Enterococcus (MPN/100 ml)	-	-	-	7.2	-	-	<1	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242583**

Parameters	Aug 2014	Sept 2014	Dec 2014	March 2015	June 2015	Aug 2015	Nov 2015	Feb 2016	May 2016
Groundwater Elevation (ft)	27.04	26.25	27.18	28.99	27.4	26.09	25.43	27.6	27.58
pH	6.92	6.97	7.02	6.98	6.92	6.94	5.72	6.88	5.92
Conductivity (umhos)	122.5	127.1	128.6	112.6	108.6	112.3	169	129	119
Temperature (Celsius)	16.1	16.3	14.6	10.4	14.5	15.5	16.56	11.34	12.19
Dissolved Oxygen	3.59	3.39	3.78	4.32	3.56	3.34	3.58	2.09	1.02
Total Dissolved Solids	155	287	121	97	154	204	190	120	150
Nitrates	14.9	20.4	18.3	15.9	18.6	18.7	18.5	11.2	12
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	14.9	20.4	18.3	15.9	18.6	18.7	18.5	11.2	12
Total Phosphorus	<0.05	0.0539	<0.05	<0.05	0.112	0.107	<0.05	<0.05	0.0622
Chlorides	15.9	14.3	14.7	13.1	12.9	11.3	11.2	11.3	9.85
Sodium	6.26	6.14	5.24	5.04	6.33	5.54	5.42	5.12	5.01
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	<1.8	<1.8	<1.8	<1.8	-	-
Enterococcus (MPN/100 ml)	1	-	1	<1	2	>2,419.6	<1	-	-

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242583**

Parameters	Aug 2016	Nov 2016	Feb 2017	May 2017	Aug 2017	Nov 2017	Feb 2018	May 2018	Aug 2018
Groundwater Elevation (ft)	25.52	28.63	27.02	27.45	26.23	26.2	26.54	27.05	25.78
pH	6.83	5.18	6.71	5.41	6.73	6.34	-	6.53	5.96
Conductivity (umhos)	140	116	249	139	186	151	169	109	135
Temperature (Celsius)	15.94	18.5	12.24	13.2	19.09	16.38	13.74	20.5	20.1
Dissolved Oxygen	3.61	-	7.09	-	4.22	4.05	-	-	-
Total Dissolved Solids	170	154	182	151	154	48	120	122	194
Nitrates	14.1	19.1	25.8	18.2	16.1	14.5	10.5	10.8	14.7
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05
Total Nitrogen	14.1	19.1	25.8	18.2	16.1	14.5	10.7	11.4	<14.8
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorides	7.76	8.15	9.34	13.5	6.62	5.16	6.2	10.9	9.49
Sodium	4.93	5.71	6.07	5.4	4.97	4.4	4.4	7.3	6.2
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<1.8	110	<1.8	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	<1	1	1	1	8.4	26.3	<2.0	1	<1.0

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242583**

Parameters	Nov 2018	Feb 2019	May 2019	Aug 2019	Nov 2019	Feb 2020	May 2020	Aug 2020	Nov 2020	Feb 2021
Groundwater Elevation (ft)	28.91	28.68	28.13	24.43	23.74	25.42	26.58	26.93	29.18	29.55
pH	4.79	5.77	5.83	5.86	6.17	6.49	7.77	7.41	7.00	7.29
Conductivity (umhos)	206	197	244	257	249	220	195	194	222	255
Temperature (Celsius)	14	14.48	14.72	20.02	16.08	9.72	17.88	20.24	14.48	10.17
Dissolved Oxygen	5.54	6.97	9.62	2.67	1.67	1.93	1.97	5.78	2.6	1.07
Total Dissolved Solids	164	184	276	264	194	190	192	190	220	280
Nitrates	18.7	17.4	21.6	21.5	19.8	16.6	15.1	16.4	16.8	17.7
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	<18.8	17.6	<21.7	21.6	19.8	16.8	15.2	16.4	16.9	17.9
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorides	12.8	13.3	25.9	23.6	23.1	23.3	16.5	15.8	22.6	29.6
Sodium	7.5	6.9	6.1	4.81	4.87	9.28	1.67	1.5	5.42	4.35
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	18	<2.0	<2.0
Enterococcus (MPN/100 ml)	<1.0	<1.0	NS	<2	<1.0	<1.0	<1.0	<1	<1	2

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 242583**

<b>Parameters</b>	<b>May 2021</b>	<b>Aug 2021</b>
<b>Groundwater Elevation (ft)</b>	29.50	26.35
<b>pH</b>	8.21	7.13
<b>Conductivity (umhos)</b>	339	340
<b>Temperature (Celsius)</b>	12.92	19.27
<b>Dissolved Oxygen</b>	0.33	0.80
<b>Total Dissolved Solids</b>	370	462
<b>Nitrates</b>	18.2	13.4
<b>Ammonia Nitrogen</b>	<0.05	<0.05
<b>Total Nitrogen</b>	18.4	13.7
<b>Total Phosphorus</b>	<0.05	<0.05
<b>Chlorides</b>	50.2	72.8
<b>Sodium</b>	6.20	7.25
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	<1.0	38.3

**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 250844**

Parameters	June 2015	July 2015	Aug 2015	Sept 2015	Nov 2015	Jan 2016	March 2016	May 2016	July 2016	Sept 2016
Groundwater Elevation (ft)	21.98	24.18	23.69	23.29	23.68	24.54	25.88	25.86	23.96	23.16
pH	6.88	6.91	6.89	6.85	5.66	5.84	5.38	5.81	5.66	5.93
Conductivity (umhos)	185.4	181.1	138.5	177.1	241	249	259	228	267	259
Temperature (Celsius)	14.2	14.2	14.6	16.4	13.94	13.14	14.08	13.93	15.69	15.14
Dissolved Oxygen	4.01	3.65	3.96	3.25	2.76	1.96	1.71	2.67	4.52	9.35
Total Dissolved Solids	202	188	213	173	210	190	207	212	206	229
Nitrates	30.3	27.2	29.5	28.6	33	30.9	32.3	23.3	28.7	32.6
Ammonia Nitrogen	0.255	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Nitrogen	30.3	27.2	29.5	28.6	33	30.9	32.3	23.3	28.7	32.6
Total Phosphorus	<0.05	0.0751	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorides	13.7	13.2	13.3	12.6	13.6	12.8	12	11.6	10.3	12.7
Sodium	6.82	6.02	6.15	6.16	6.06	6.94	5.9	5.78	4.99	5.92
Fecal Coliform (col/100 ml)	<1.8	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Enterococcus (MPN/100 ml)	<1	-	<1	<1	<1	<1	<1	<1	<1	<1

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.



Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 250844**

Parameters	Nov 2016	Jan 2017	March 2017	May 2017	July 2017	Sept 2017	Nov 2017	Feb 2018	May 2018	Aug 2018
Groundwater Elevation (ft)	26.54	25.29	24.79	25.94	24.31	25.16	24.59	25.36	25.52	23.87
pH	5.07	7.68	6.02	5.26	6.73	6.14	6.89	-	6.13	5.38
Conductivity (umhos)	115	223	210	148	178	218	159	170	135	122
Temperature (Celsius)	16.1	14.05	10.96	16.3	18.98	19.11	13.63	15.75	22.6	18.2
Dissolved Oxygen	-	6.85	7.98	-	11.01	-	5.52	-	-	-
Total Dissolved Solids	106	111	111	129	96	98	92	104	110	146
Nitrates	7.74	7.99	9.99	12.3	5.07	5.78	3.08	2.26	2.03	3.69
Ammonia Nitrogen	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05
Total Nitrogen	7.74	7.99	9.99	12.3	5.07	5.78	3.08	2.37	2.28	<3.74
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorides	5.91	3.38	6.97	13.4	5.96	5.76	5.1	5.13	7.9	7.89
Sodium	3.88	4.2	4.14	4.03	3.55	3.31	3.3	3.6	5.3	4.1
Fecal Coliform (col/100 ml)	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	<1	7.5	<1	<1	3.1	1	<1	<2.0	<1.0	<1.0

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

**Monitor Well 250844**

Parameters	Nov 2018	Feb 2019	May 2019	Aug 2019	Nov 2019	Feb 2020	May 2020	Aug 2020	Nov 2020	Feb 2021
Groundwater Elevation (ft)	27.53	27.15	26.29	23.49	22.62	24.19	24.99	23.3	27.68	27.69
pH	5.02	5.72	5.77	5.82	6.69	6.96	7.22	6.65	6.79	7.62
Conductivity (umhos)	252	219	146	174	154	146	150	144	137	67
Temperature (Celsius)	12.9	17.04	14.99	17.12	15.51	13.28	17.58	17.63	15.12	8.09
Dissolved Oxygen	3.62	5.03	8.22	2.98	1.43	1.42	2.09	4.91	2.16	0.4
Total Dissolved Solids	192	196	120	116	138	106	116	110	110	102
Nitrates	14.7	13.3	5.49	6.11	6.33	4.86	4.56	3.55	2.82	3.61
Ammonia Nitrogen	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Nitrogen	<14.8	13.5	5.6	6.11	6.33	5.00	4.56	3.63	2.82	3.61
Total Phosphorus	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05
Chlorides	17.7	18.3	11.3	9.28	10.9	9.08	7.39	7.01	6.17	6.31
Sodium	13.2	5.7	3.5	2.71	2.02	3.56	5.37	2.26	2.64	2.59
Fecal Coliform (col/100 ml)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Enterococcus (MPN/100 ml)	<1.0	<1.0	NS	<1	<1	<1.0	<1.0	<1	<1	<1.0

**Notes:**

1. Mg/L = milligrams per liter.
2. col/100 ml = colonies per 100 milliliters of water
3. MPN/100 ml = most probable per 100 milliliters of water.

Harbeson Farm, Clean Delaware, LLC  
Summary of Field Measurements and Laboratory Analysis of Groundwater Samples

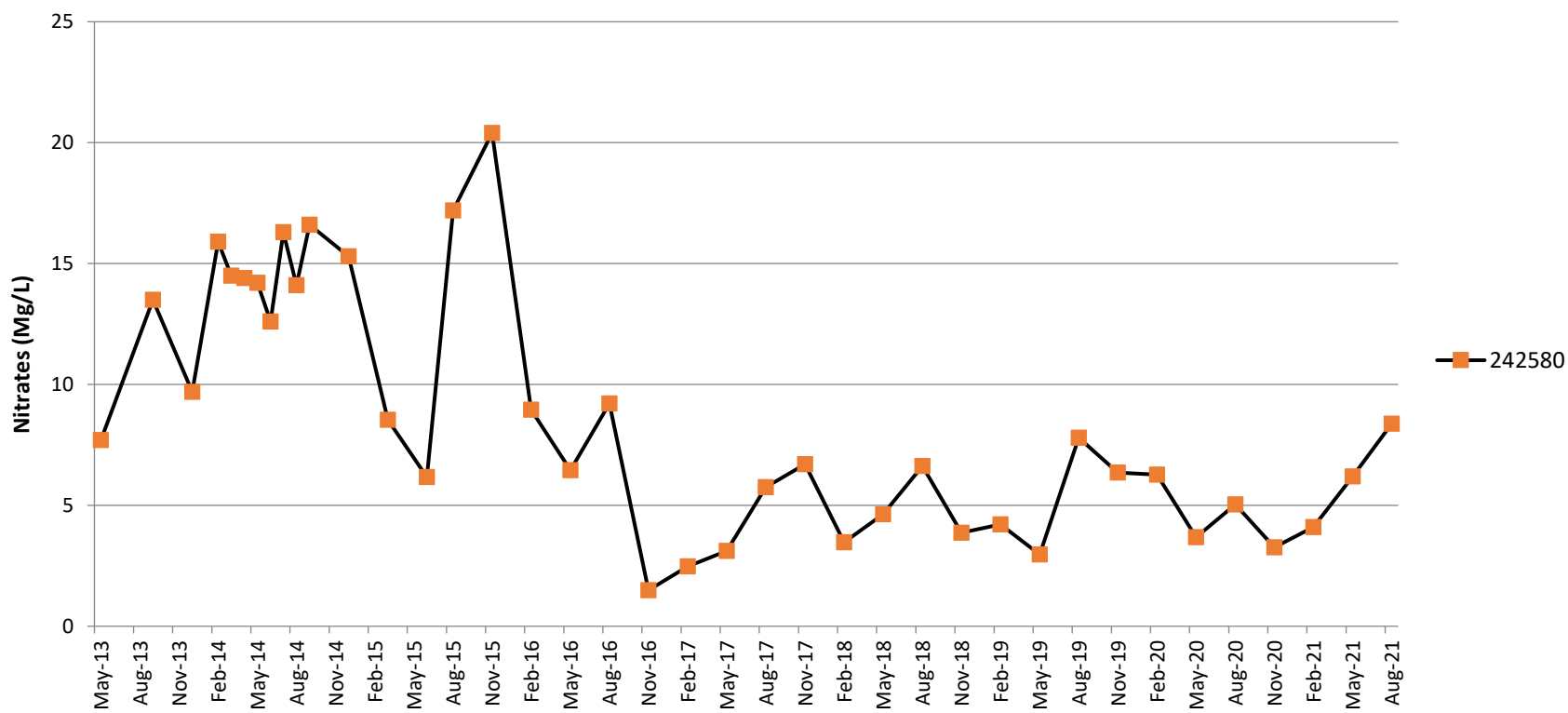
**Monitor Well 250844**

<b>Parameters</b>	<b>May 2021</b>	<b>Aug 2021</b>
<b>Groundwater Elevation (ft)</b>	26.92	24.10
<b>pH</b>	7.34	7.3
<b>Conductivity (umhos)</b>	117	92
<b>Temperature (Celsius)</b>	16.73	20.69
<b>Dissolved Oxygen</b>	0.35	13.17
<b>Total Dissolved Solids</b>	122	158
<b>Nitrates</b>	1.74	1.78
<b>Ammonia Nitrogen</b>	<0.05	<0.05
<b>Total Nitrogen</b>	1.82	1.93
<b>Total Phosphorus</b>	<0.05	<0.05
<b>Chlorides</b>	5.01	3.8
<b>Sodium</b>	4.72	4.57
<b>Fecal Coliform (col/100 ml)</b>	<2.0	<2.0
<b>Enterococcus (MPN/100 ml)</b>	<1.0	152

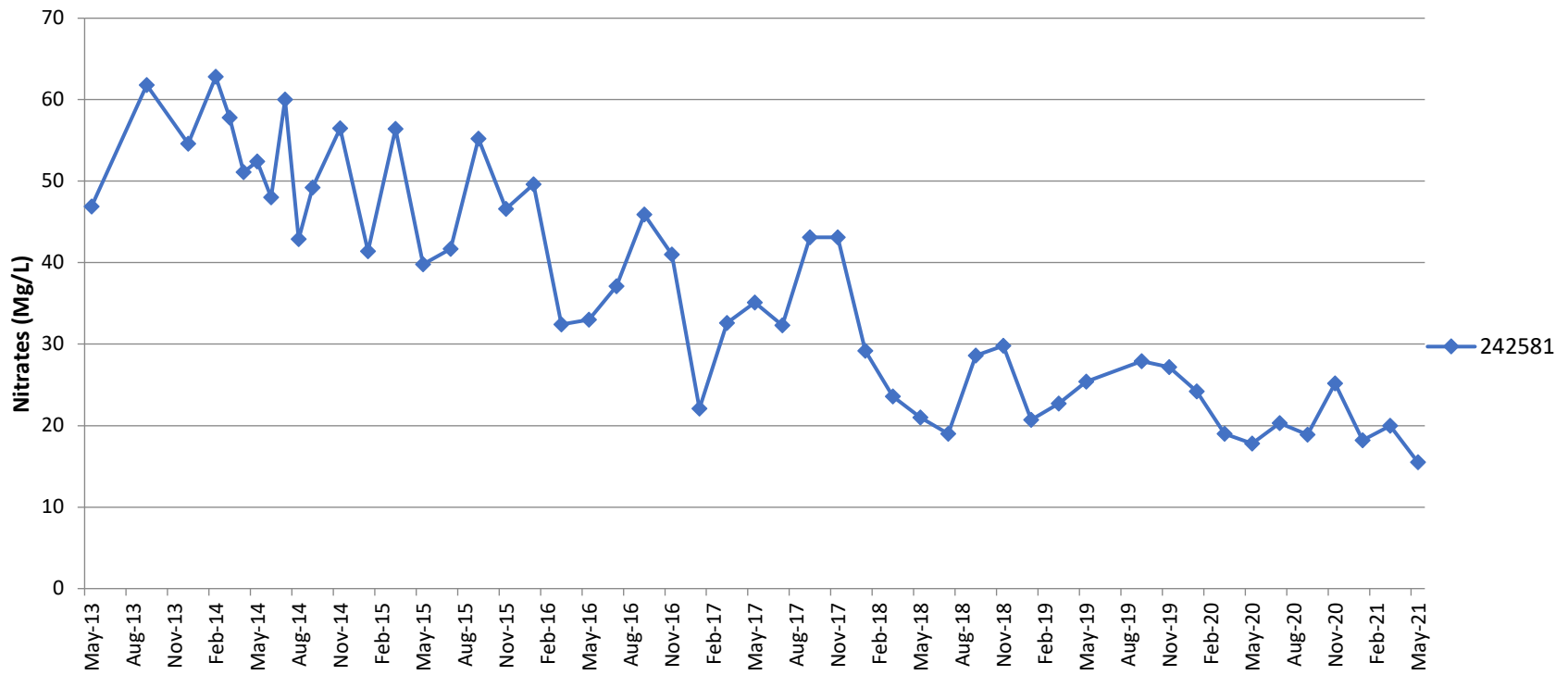
**Notes:**

- 1. Mg/L = milligrams per liter.**
- 2. col/100 ml = colonies per 100 milliliters of water**
- 3. MPN/100 ml = most probable per 100 milliliters of water.**

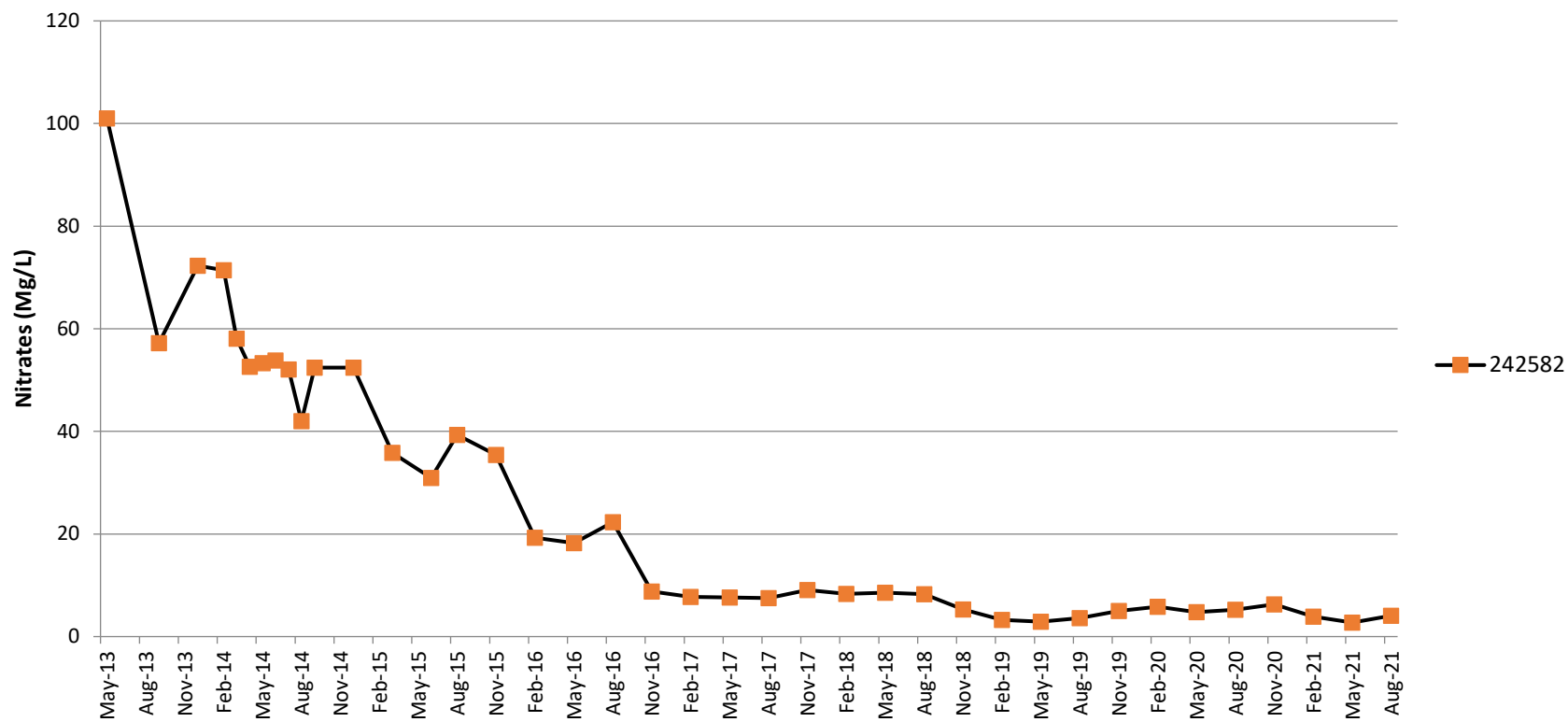
Harbeson Farm, Nitrate Concentrations in Monitor Well 242580



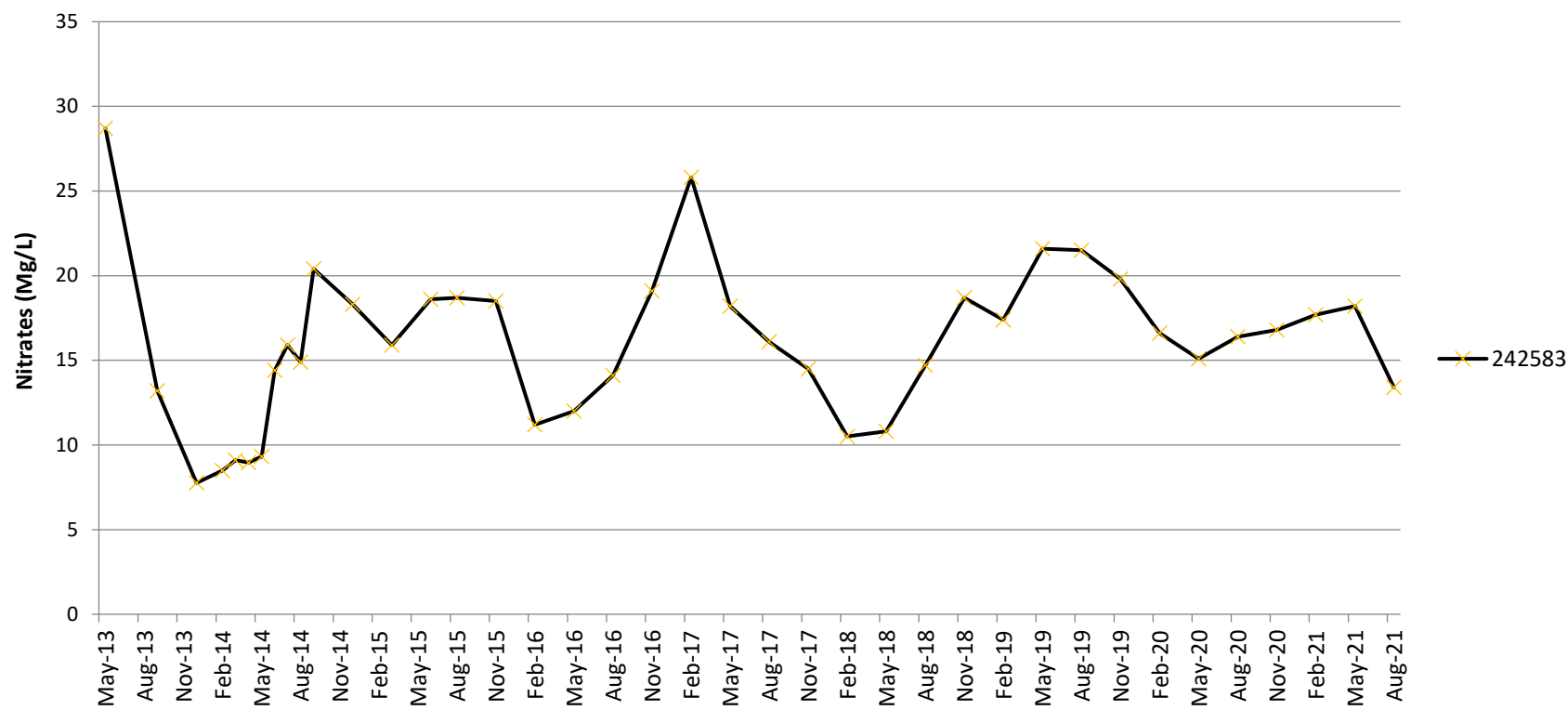
Harbeson Farm, Nitrate Concentrations in Monitor Well 242581



Harbeson Farm, Nitrate Concentrations in Monitor Well 242582

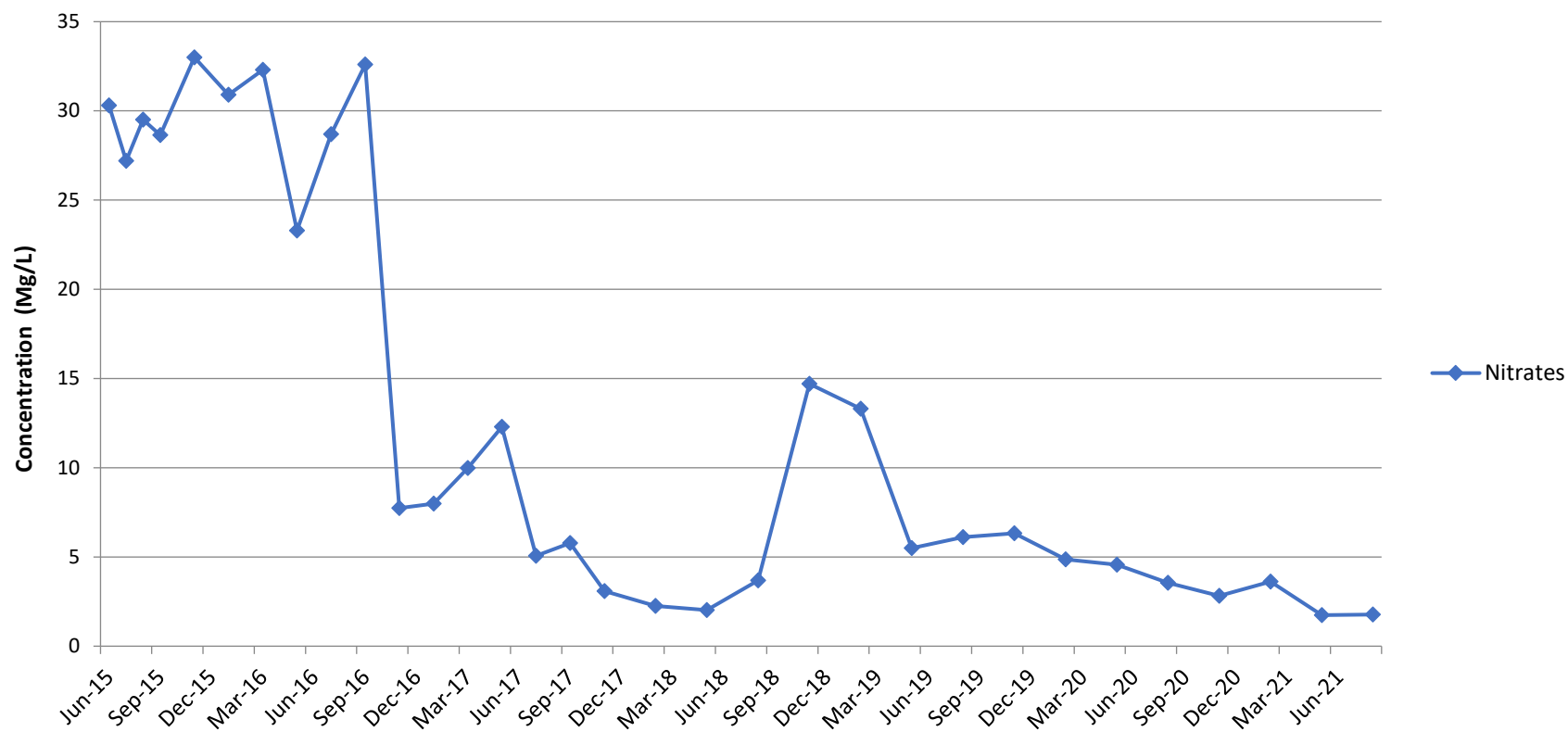


Harbeson Farm, Nitrate Concentrations in Monitor Well 242583

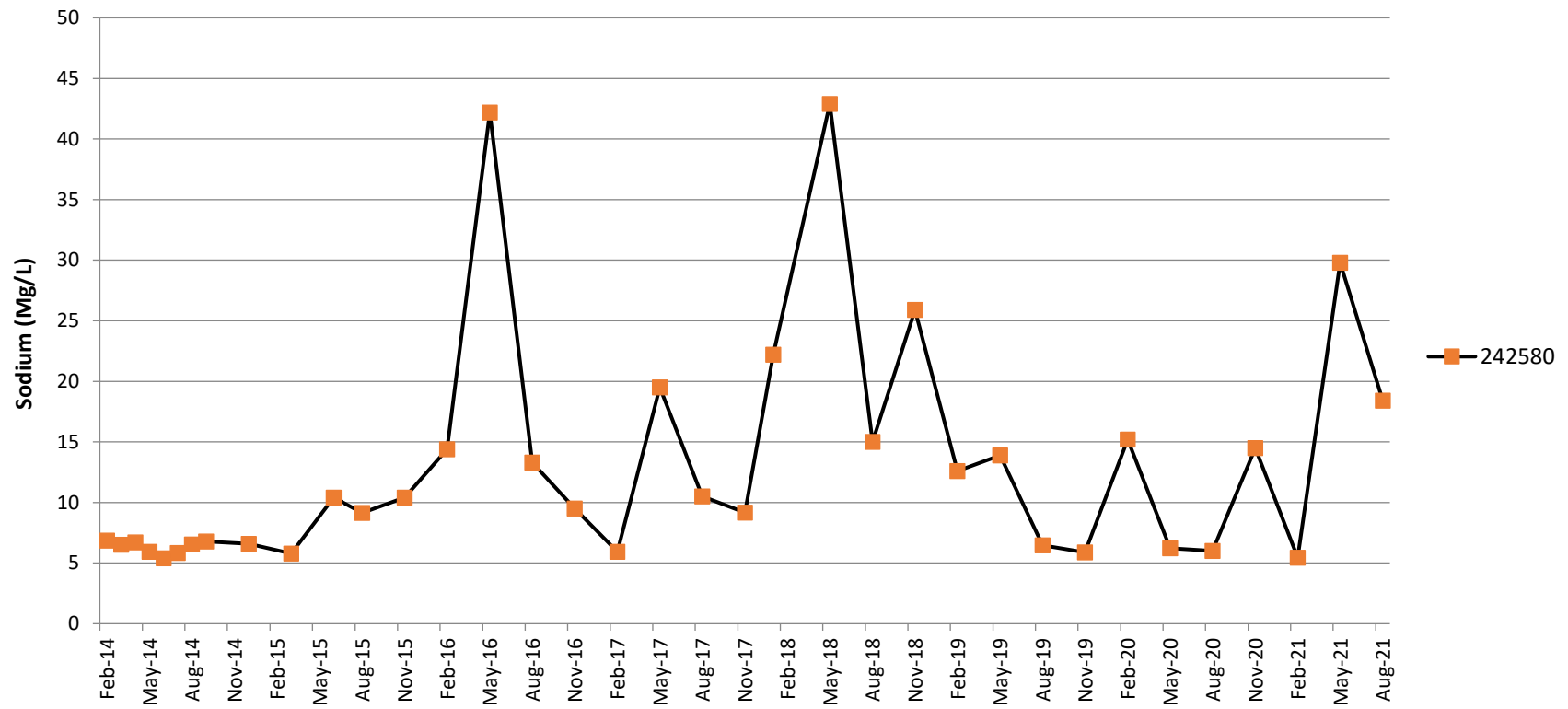




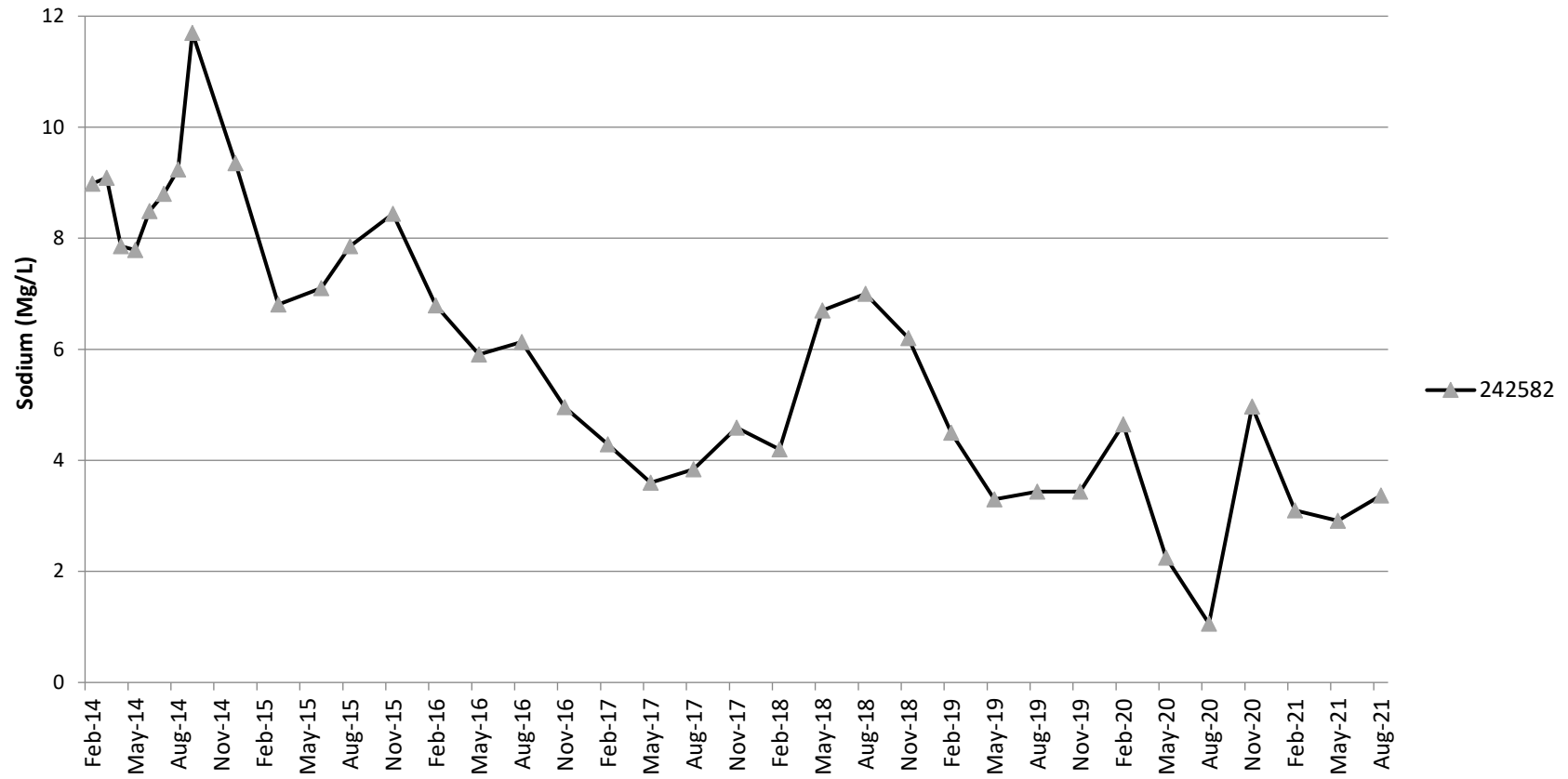
Harbeson Farm, Nitrates Concentrations in Monitor Well 250844



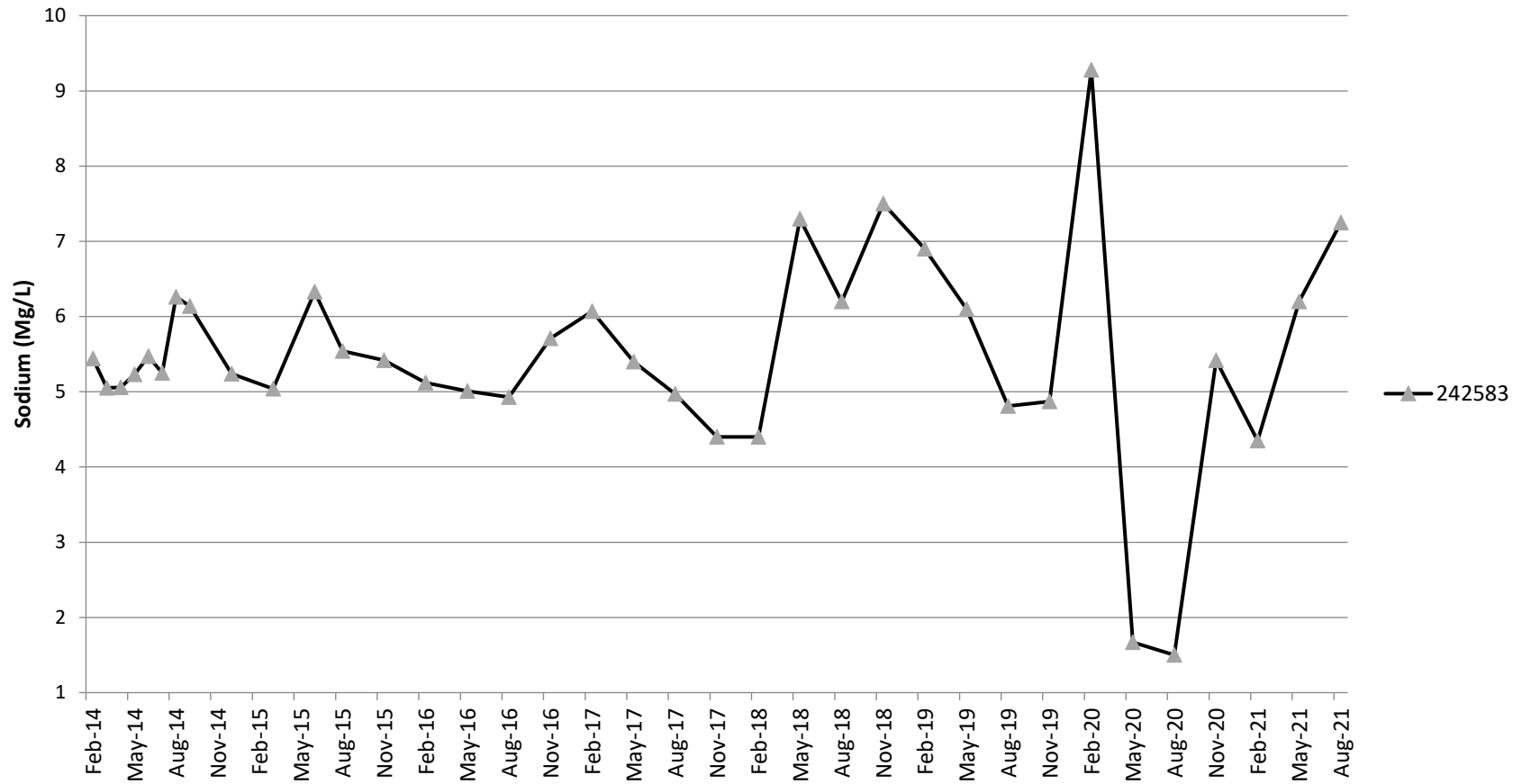
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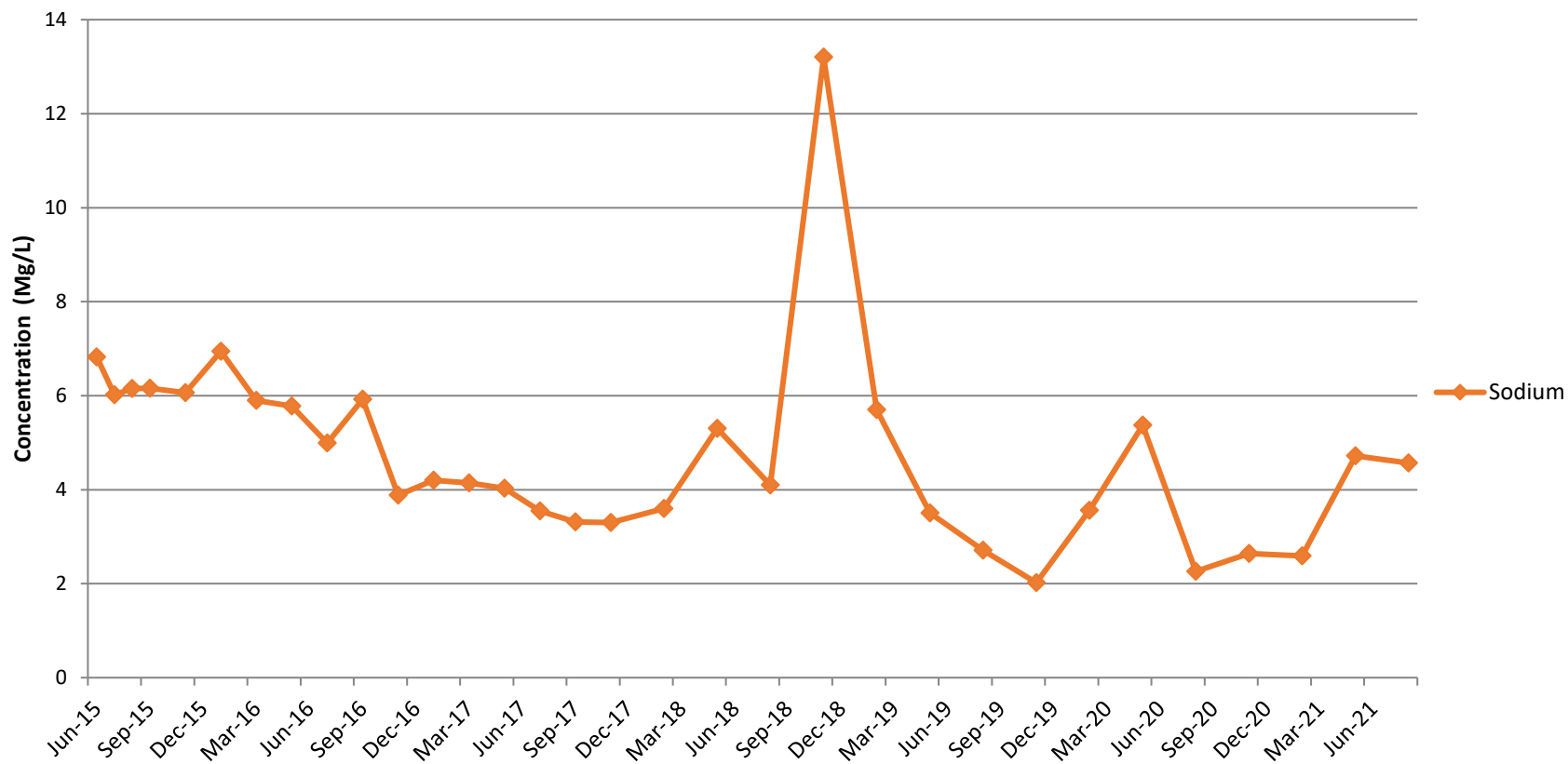
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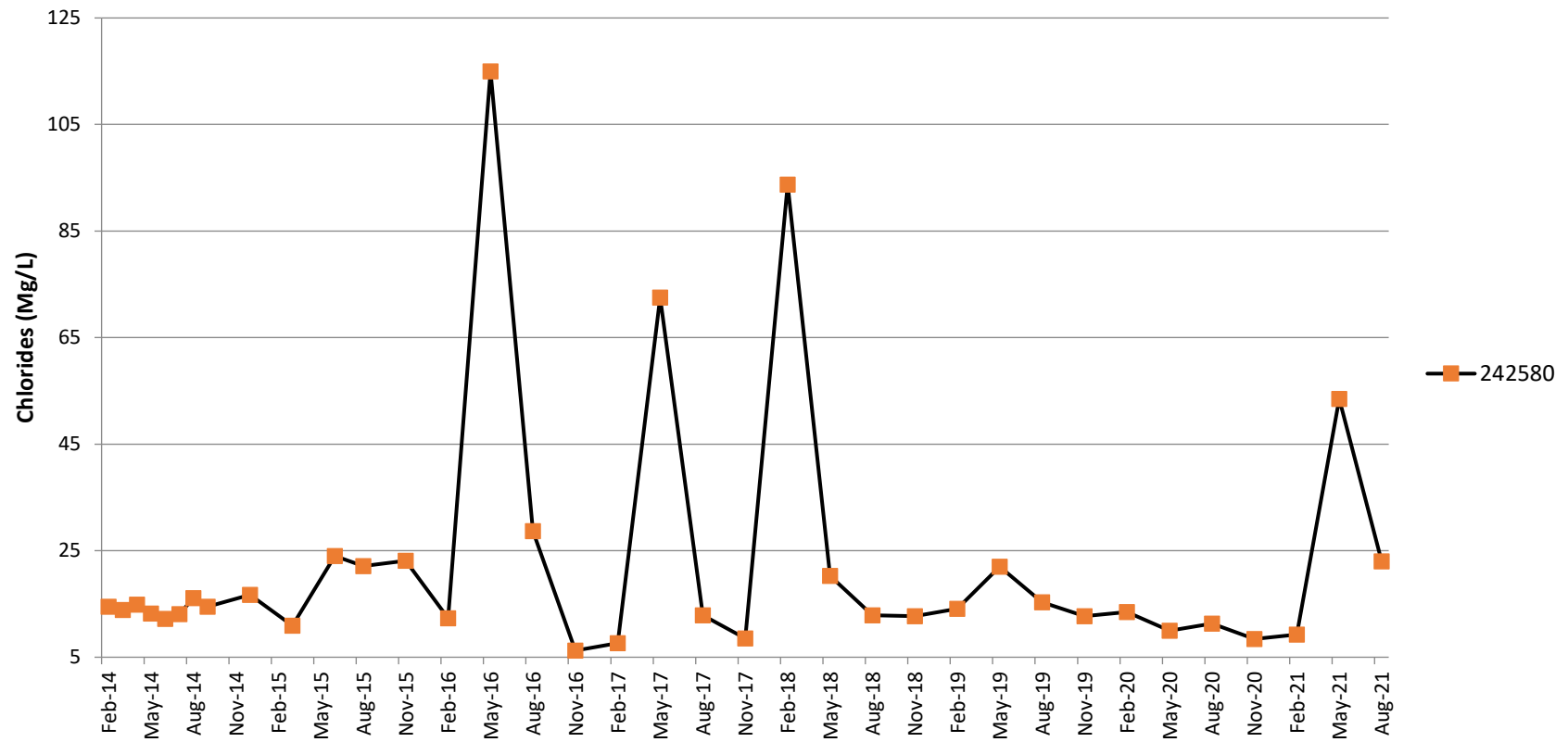
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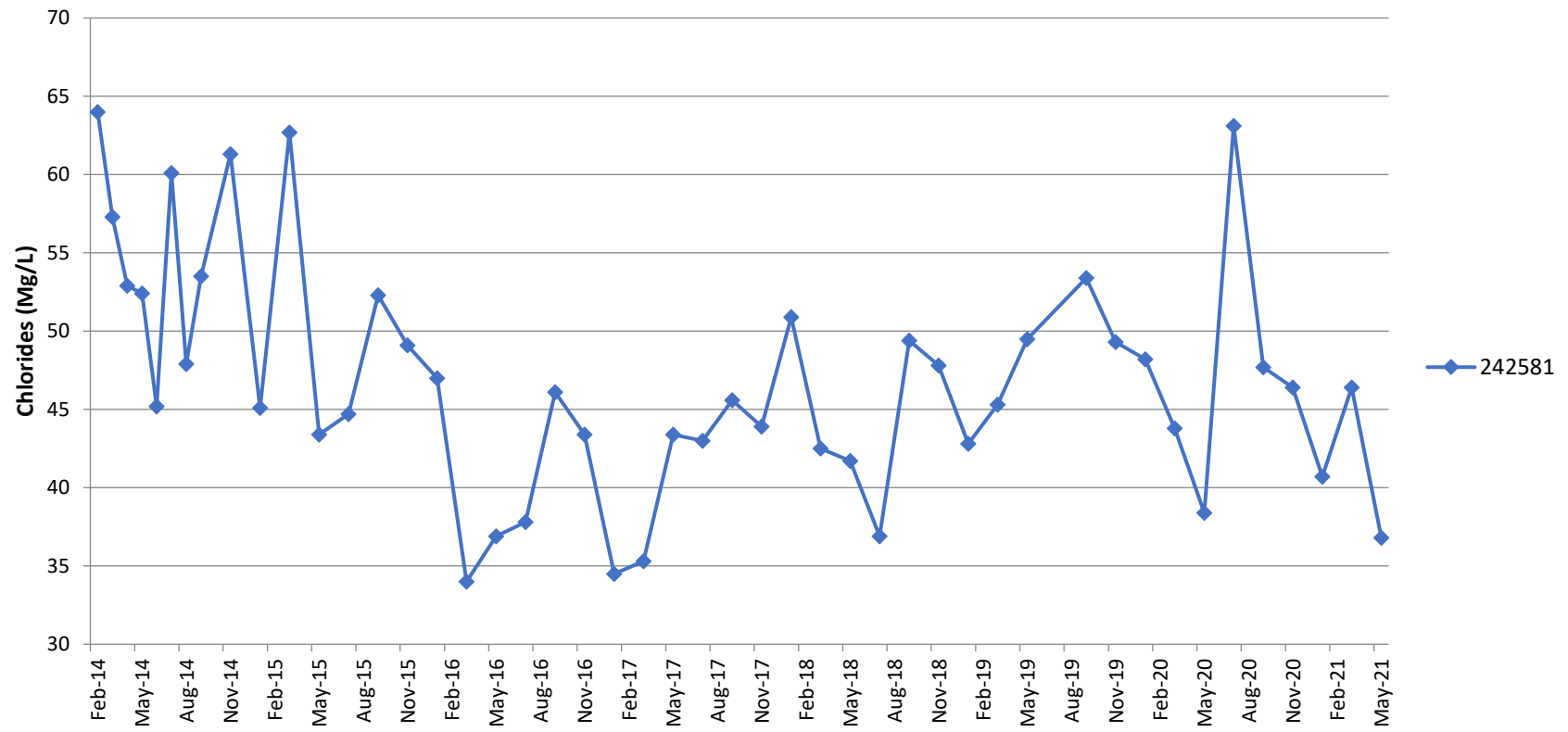
Harbeson Farm, Sodium Concentrations in Monitor Well 250844



Harbeson Farm, Chloride Concentrations in Monitor Well 242580

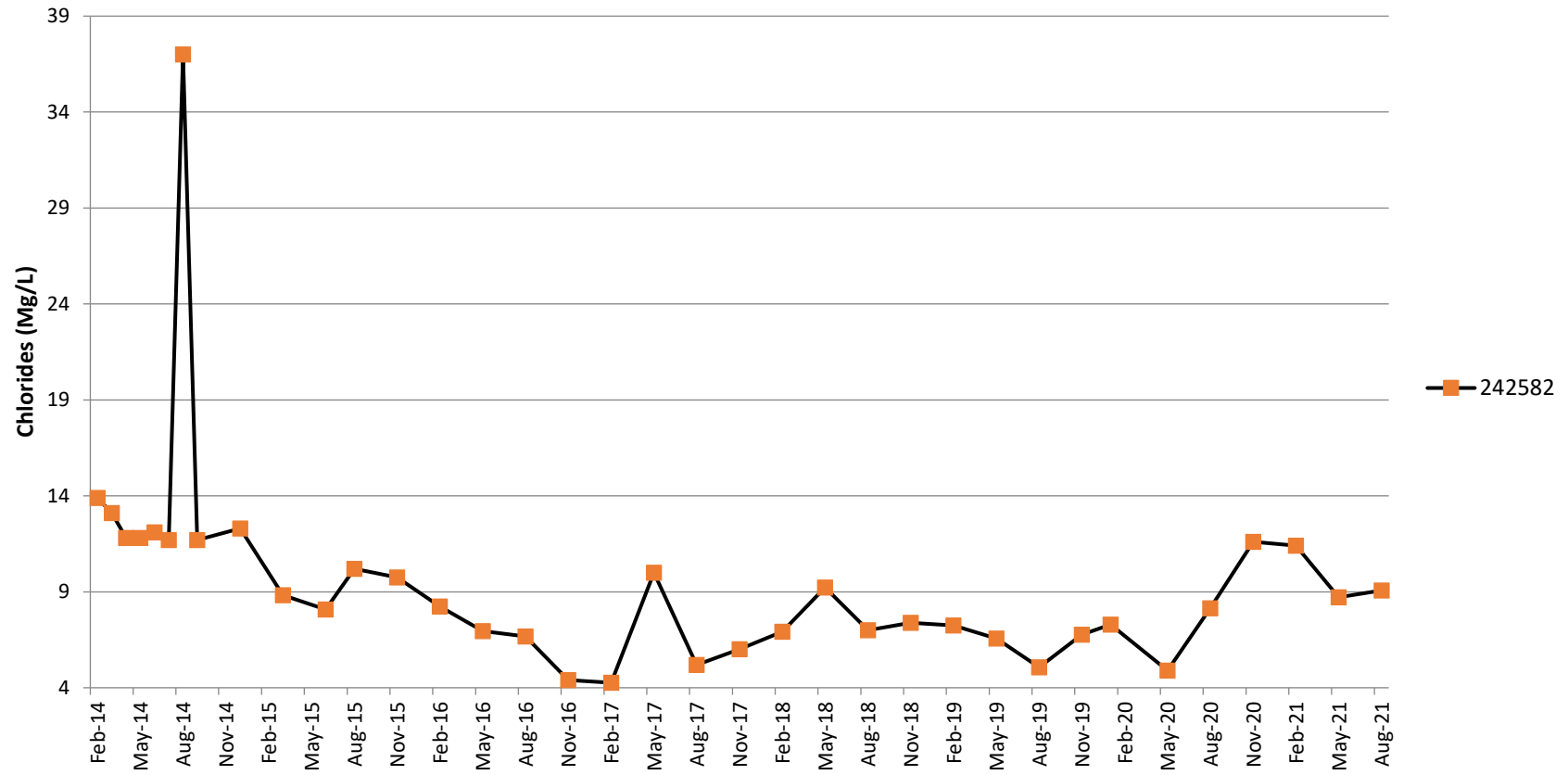


Harbeson Farm, Chloride Concentrations in Monitor Well 242581

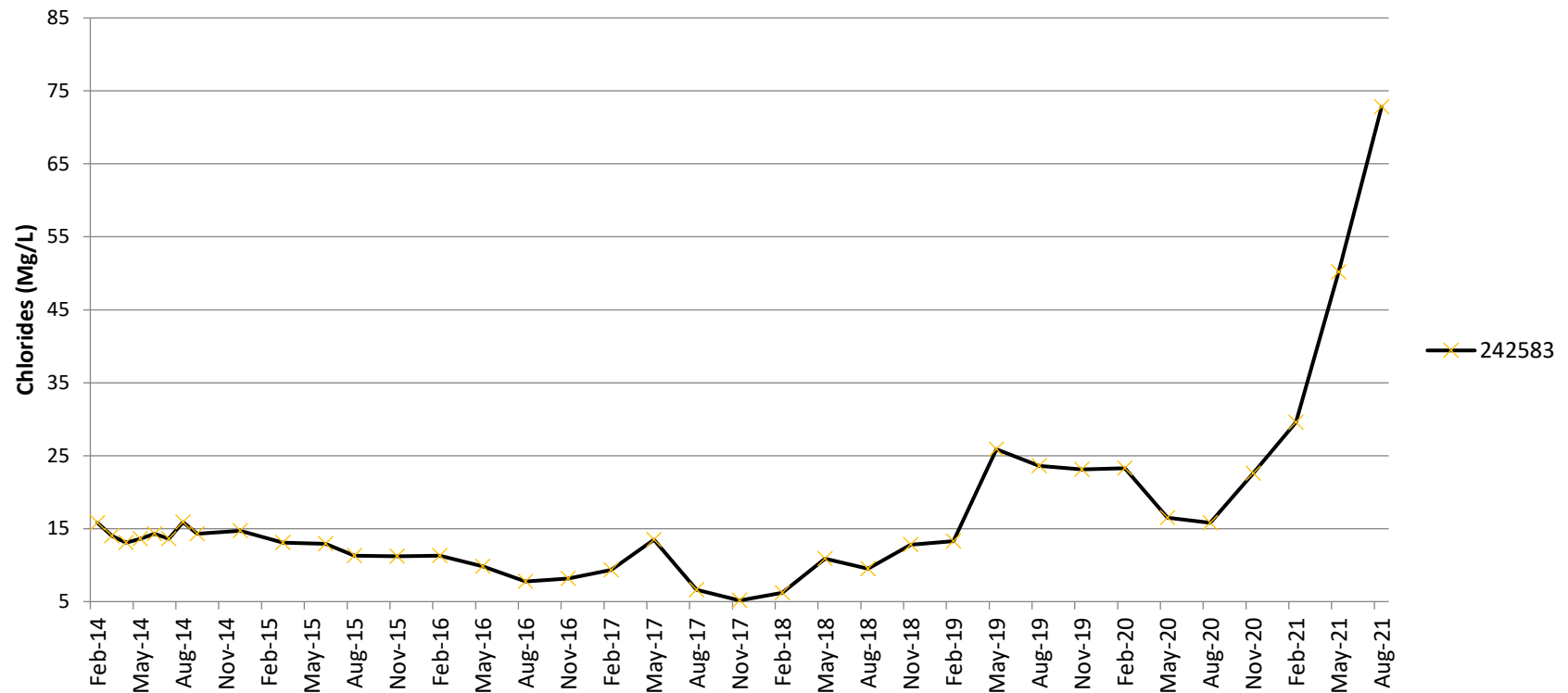




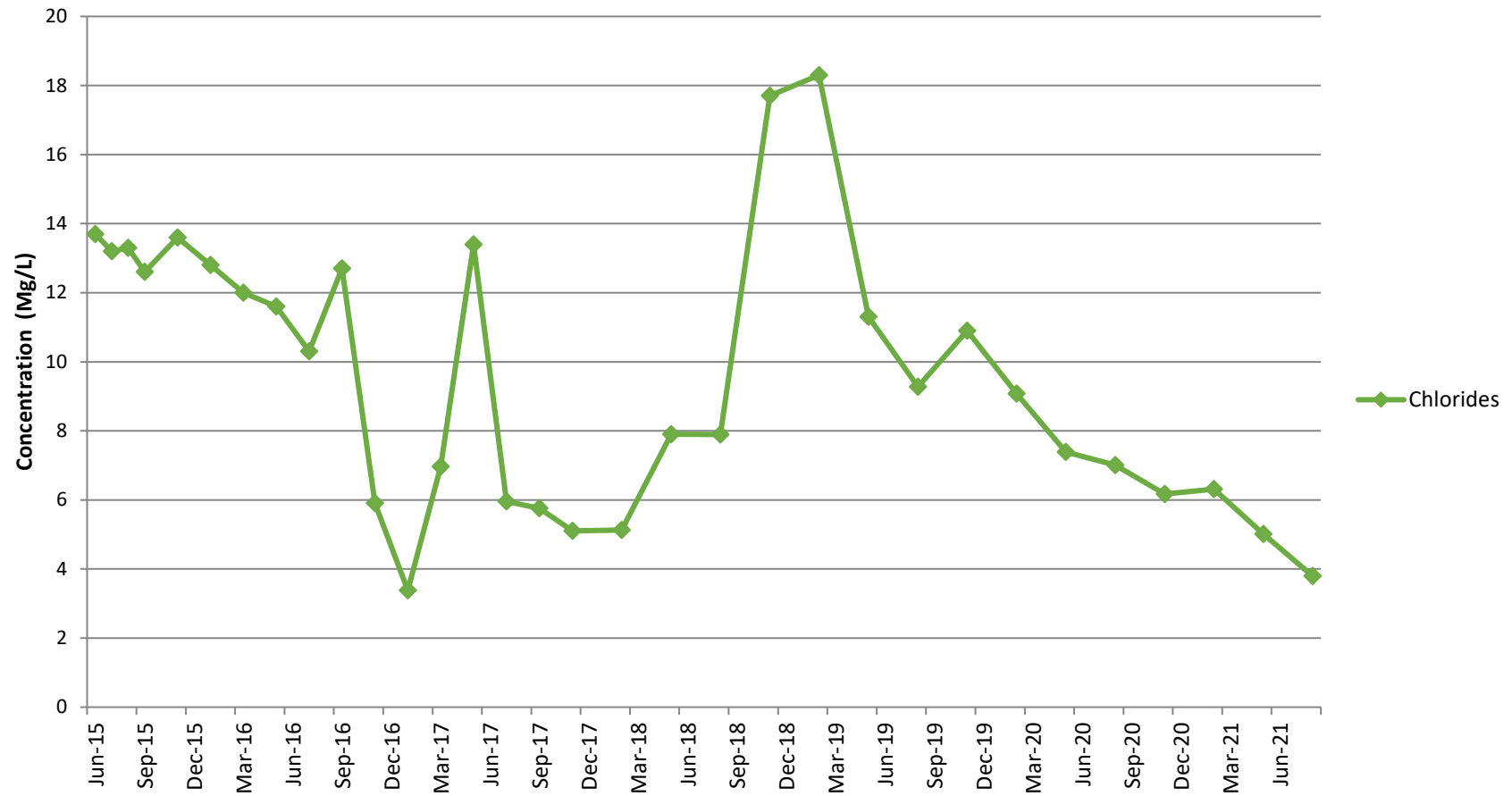
Harbeson Farm, Chloride Concentrations in Monitor Well 242582



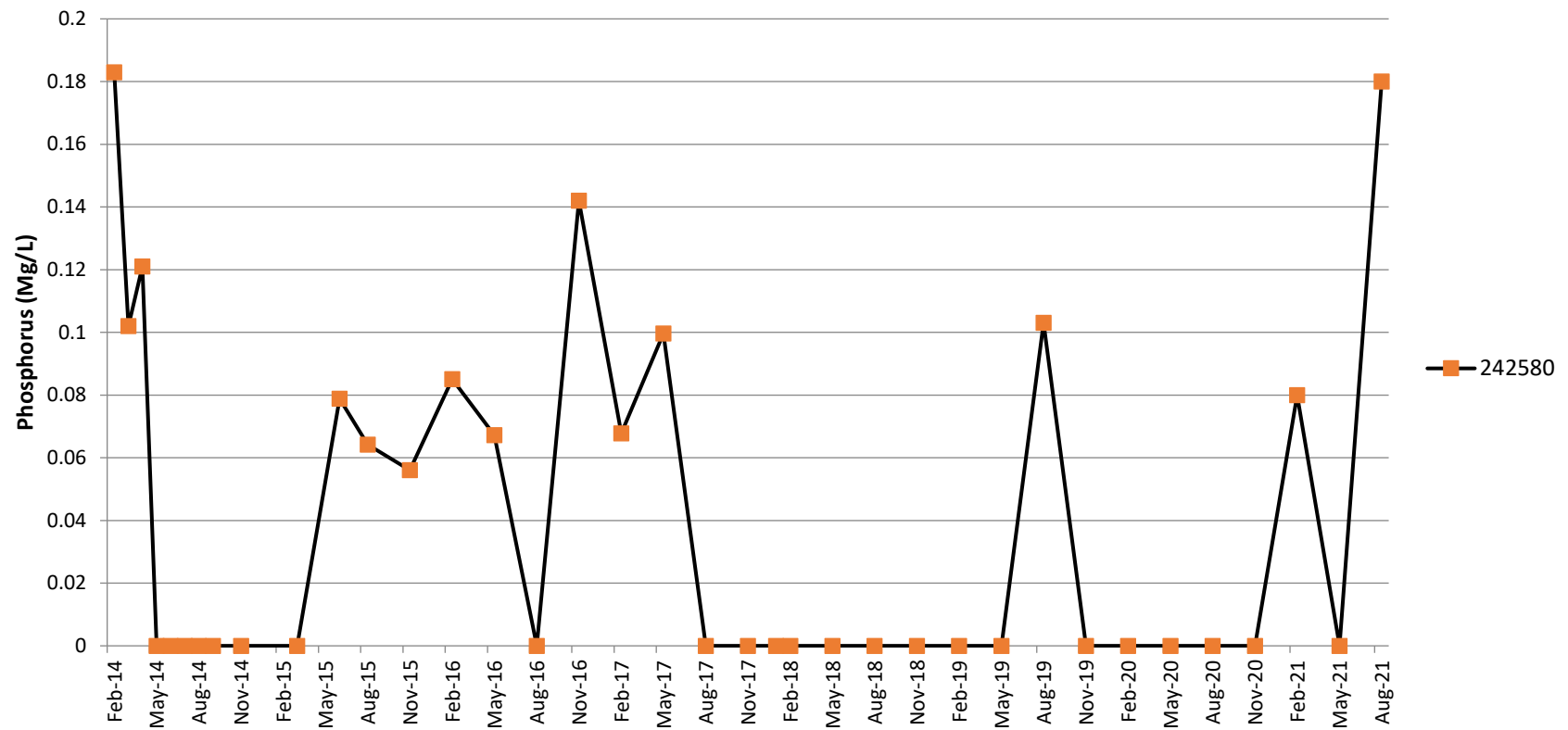
Harbeson Farm, Chloride Concentrations in Monitor Well 242583



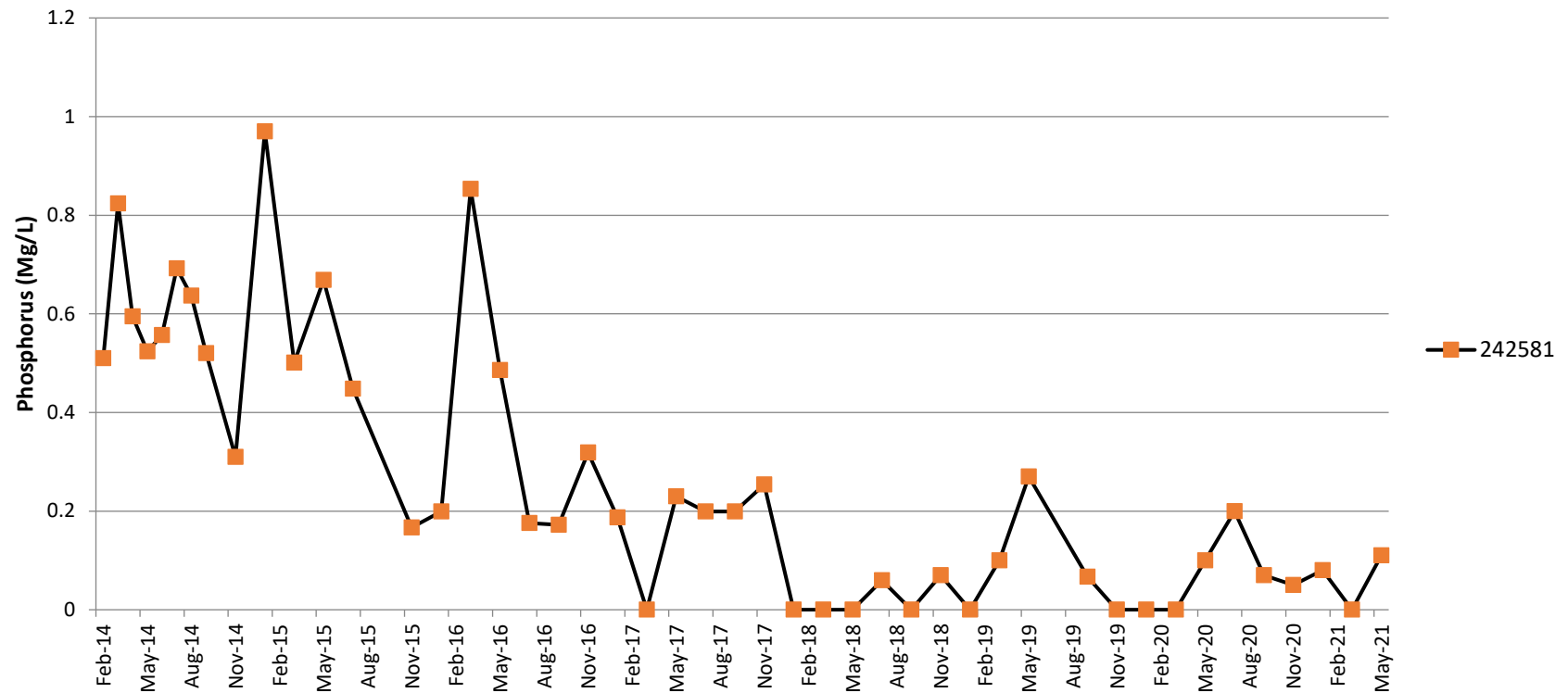
Harbeson Farm, Chlorides Concentrations in Monitor Well 250844



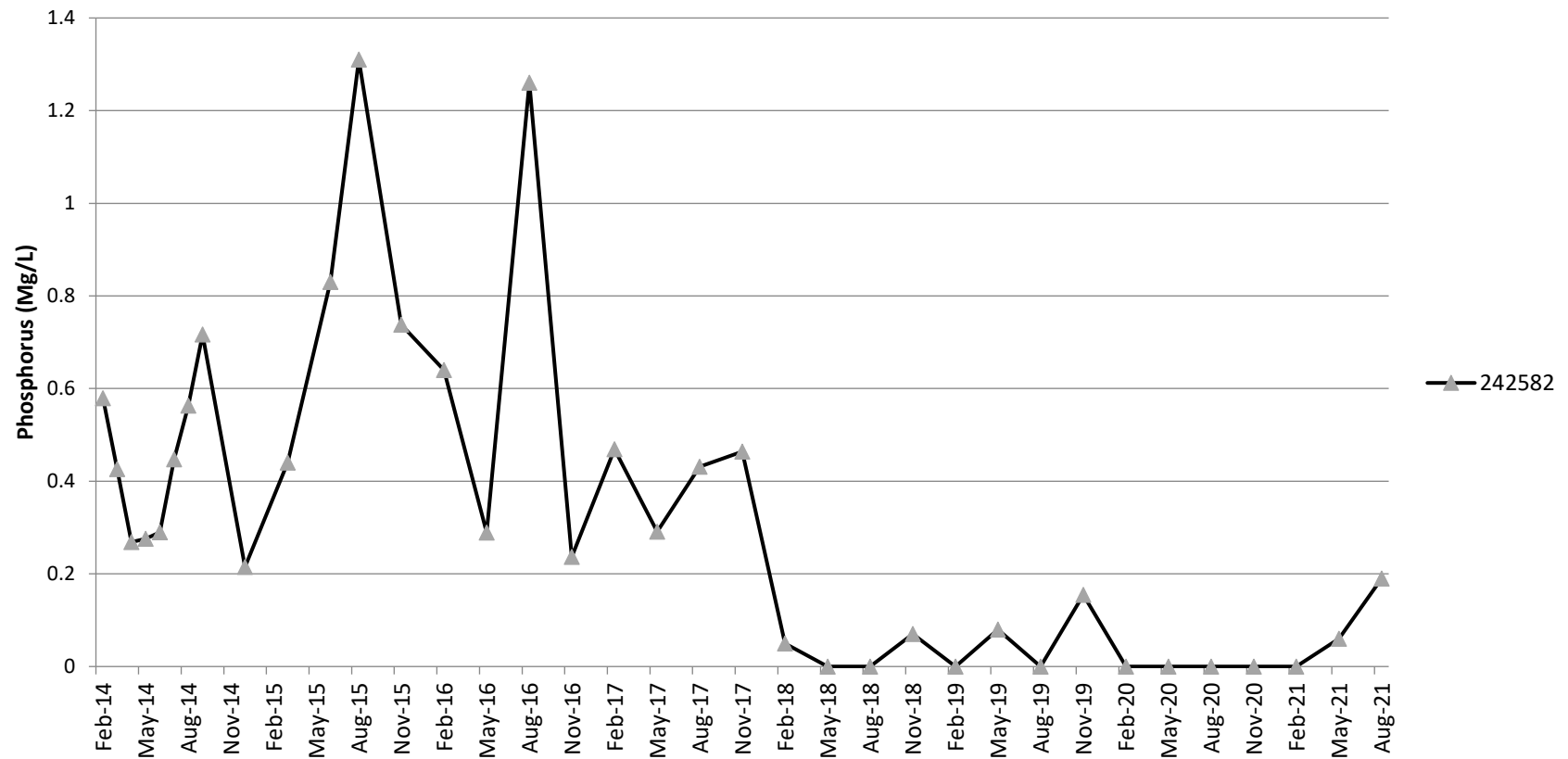
Harbeson Farm, Total Phosphorus Concentrations in Monitor Well 242580



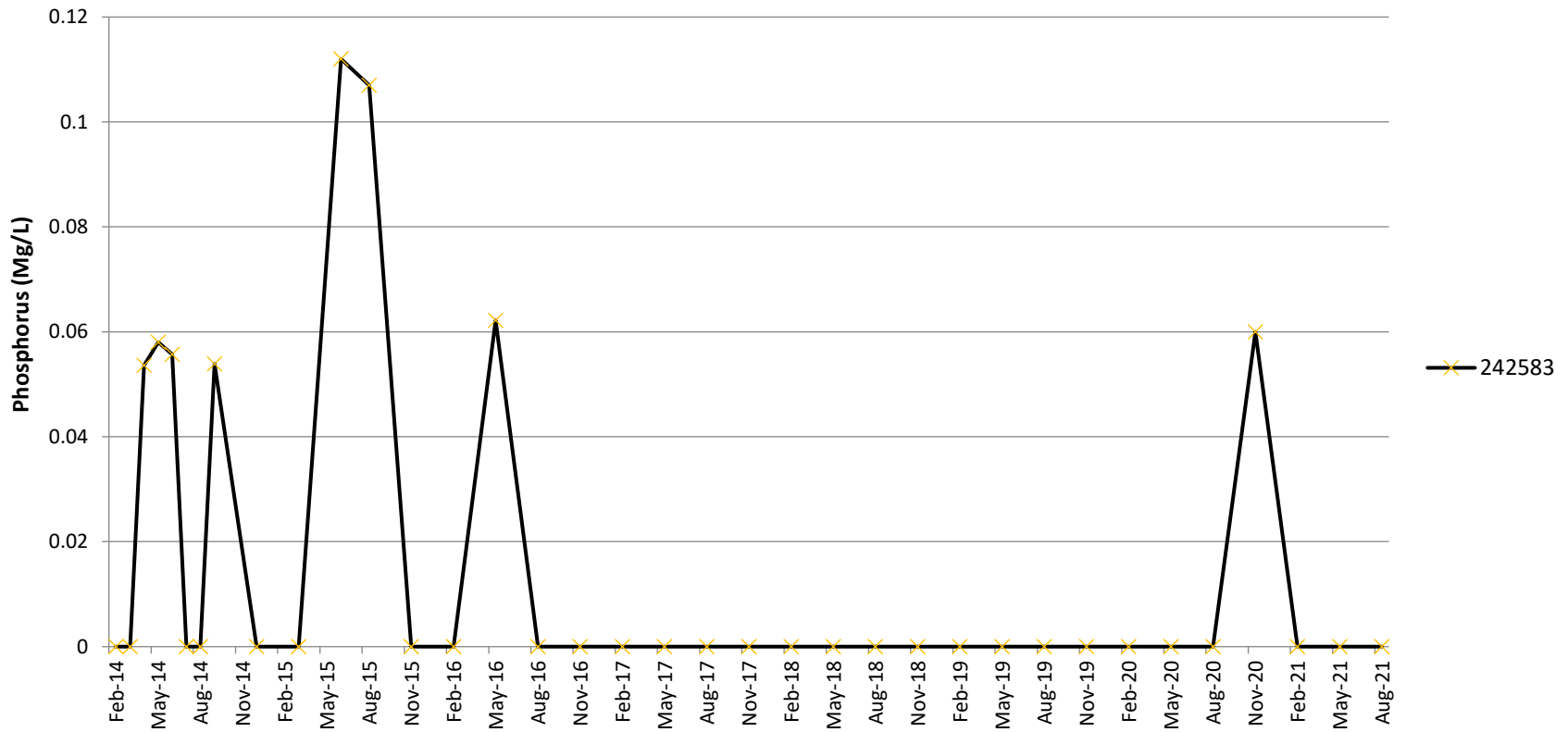
Harbeson Farm, Total Phosphorus Concentrations in Monitor Well 242581



Harbeson Farm, Total Phosphorus Concentrations in Monitor Well 242582



Harbeson Farm, Total Phosphorus Concentrations in Monitor Well 242583







MILTON FARM - AVERAGE SEASONAL HIGH WATER TABLE																						
WELL ID	242592		242593		242594		242949		242950		242951		242952		242953		242954		242955		242956	
CASING EL.	34.24		34.07		36.18		28.92		29.68		36.76		31.87		34.8		34.33		34.64		33.36	
STANDPIPE HT.	2.67		3		2.67		2.67		3		3		2.67		2.75		2.67		2.75		2.75	
	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)
2013	22.54	9.03	17.87	13.2	19.48	14.03	17.39	8.86	16.78	9.9	19.95	13.81	17.8	11.4	15.23	16.82	14.83	16.83	21.33	10.56	19.42	11.19
2014	22.44	9.13	18.5	12.57	20.18	13.33	18.03	8.22	17.82	8.86	21.48	12.28	19.44	9.76	16.47	15.58	15.7	15.96	22.56	9.33	20.54	10.07
2015	22.15	9.42	18.57	12.5	19.78	13.73	18.07	8.18	17.18	9.5	20.55	13.21	18.66	10.54	15.52	16.53	14.7	16.96	23.2	8.69	19.97	10.64
2016	22.79	8.78	18.68	12.39	20.15	13.36	18.62	7.63	17.79	8.89	21.44	12.32	19.46	9.74	16.45	15.6	15.71	15.95	22.66	9.23	20.59	10.02
2017	21.58	9.99	17.99	13.08	19.13	14.38	17.23	9.02	16.46	10.22	19.88	13.88	17.78	11.42	14.88	17.17	14.1	17.56	21.59	10.3	19.27	11.34
2018	22.84	8.73	19.05	12.02	21.1	12.41	18.78	7.47	18.41	8.27	21.58	12.18	19.71	9.49	16.82	15.23	15.92	15.74	23.06	8.83	20.98	9.63
2019	22.8	8.77	18.78	12.29	20.55	12.96	18.35	7.9	19.54	7.14	22.42	11.34	20.46	8.74	17.49	14.56	16.8	14.86	23.26	8.63	21.28	9.33
2020	22.34	9.23	18.7	12.37	20.05	13.46	18.02	8.23	17.48	9.2	20.71	13.05	18.72	10.48	15.8	16.25	14.88	16.78	22.39	9.5	20.21	10.4
2021	23.19	8.38	18.97	12.1	20.58	12.93	18.42	7.83	18.63	8.05	22.45	11.31	20.57	8.63	19.8	12.25	16.83	14.83	23.64	8.25	21.39	9.22
AVG	22.52	9.05	18.57	12.50	20.11	13.40	18.10	8.15	17.79	8.89	21.16	12.60	19.18	10.02	16.50	15.55	15.50	16.16	22.63	9.26	20.41	10.20



**HARBESON FARM - AVERAGE SEASONAL HIGH WATER TABLE**

WELL ID	<b>242580</b>		<b>242581</b>		<b>242582</b>		<b>242583</b>		<b>250844</b>	
CASING EL.	37.96		38.73		38.62		38.48		36.64	
STANDPIPE HT.	3		2.67		2.75		2.67		3	
	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)	HIGHEST RECORDED GROUNDWATER ELEVATION PER YEAR	DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FT)
2013	27.32	7.64	27	9.06	28.46	7.41	27.71	8.1	N/A	N/A
2014	28.25	6.71	28.22	7.84	30.19	5.68	29.12	6.69	N/A	N/A
2015	28.31	6.65	28.27	7.79	30.82	5.05	28.99	6.82	24.18	9.46
2016	28.56	6.4	27.74	8.32	29.72	6.15	28.63	7.18	26.54	7.1
2017	27.07	7.89	26.72	9.34	29.01	6.86	27.45	8.36	25.94	7.7
2018	28.99	5.97	28.33	7.73	31.07	4.8	28.91	6.9	27.53	6.11
2019	29.1	5.86	28.37	7.69	30.62	5.25	32.04	3.77	30.4	3.24
2020	28.91	6.05	28.33	7.73	31.62	4.25	29.18	6.63	27.68	5.96
2021	29.86	5.1	29.13	6.93	31.62	4.25	30.38	5.43	28.24	5.4
<b>AVG</b>	<b>28.49</b>	<b>6.47</b>	<b>28.01</b>	<b>8.05</b>	<b>30.35</b>	<b>5.52</b>	<b>29.16</b>	<b>6.65</b>	<b>27.22</b>	<b>6.42</b>



# **APPENDIX D**

## **2020 METALS AND SOIL SAMPLING RESULTS**

CLEAN DELAWARE, INC.  
P.O. BOX 123  
MILTON, DE 19968

#46267

ISAACS ROAD  
ROUTE 30

WAYNE HUDSON FARM

MILTON-ELLENDAL HIGHWAY  
ROUTE 16

GRAVEL HILL ROAD  
ROUTE 30



SUSSEX COUNTY  
WATERSHED #27



67-B

5.9

67-C

66-B

11.2

67-A

9.5

7.5

67-D

13.4

66-A

9.4

67-E

11.8

65-A

13.2

65-C

18.0

65-B

10.9

65-D

15.5

65-E

13.9

64-B

13.4

64-A

14.1



CLEAN DELAWARE, INC.  
P.O. BOX 123  
MILTON, DE 19968

#46267

NEW MARKET  
VILLAGE FARM

REYNOLDS POND ROAD

400-A

17.0

400-B

16.9



SUSSEX COUNTY  
WATERSHED #27



CLEAN DELAWARE, INC.  
P.O. BOX 123  
MILTON, DE 19968

#46267

HARBESON FARM

LEWES GEORGETOWN HIGHWAY  
ROUTE 9

INDIAN MISSION ROAD  
ROUTE 5

300-A

300-B

23.5

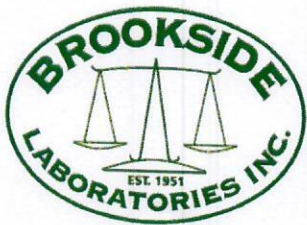
14.2

RAILROAD

 **KEEN**  
CONSULTING

SUSSEX COUNTY  
WATERSHED #27





**Brookside Laboratories, Inc.**  
**Analytical Report**

200 White Mountain Drive  
New Bremen, OH 45869  
Phone: (419) 977-2766  
Fax: (419) 977-2767

Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/03/2020  
Date Received: 10/06/2020

Lab Number: SE1006015  
Location:  
Description: 64-A  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep</u>	<u>Analysis</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
		<u>Method</u>	<u>Method</u>	<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Oct-12	Oct-13	LMP	2.650942 mg/kg	1.886792
IB040	BARIUM	3050B	6010C	Oct-12	Oct-13	LMP	48.81130 mg/kg	1.886792
IB060	CADMIUM	3050B	6010C	Oct-12	Oct-13	LMP	ND mg/kg	0.471698
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-12	Oct-13	LMP	5.698111 mg/kg	0.943396
IB120	COPPER	3050B	6010C	Oct-12	Oct-13	LMP	12.49999 mg/kg	0.943396
IB140	LEAD	3050B	6010C	Oct-12	Oct-13	LMP	9.566035 mg/kg	4.71698
IB190	NICKEL	3050B	6010C	Oct-12	Oct-13	LMP	4.094338 mg/kg	0.943396
IB210	SELENIUM	3050B	6010C	Oct-12	Oct-13	LMP	ND mg/kg	1.886792
IB300	ZINC	3050B	6010C	Oct-12	Oct-13	LMP	49.47168 mg/kg	2.830188

**Approval**



Erica Huber  
Environmental Laboratory Manager

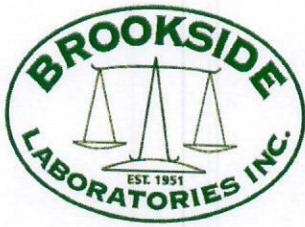
**Abbreviations/Definitions**

**ND** = Non Detect (Values only known to be somewhere between zero and the reporting limit.)

**LOQ** = Limit of Quantitation (The lowest concentration of analyte in a sample that can be determined with acceptable precision and accuracy under the stated experimental conditions.)

**Detected** = Compound was detected between zero and the Limit of Quantitation. Limits detected below the LOQ can not be quantitated.





**Brookside Laboratories, Inc.**  
**Analytical Report**

200 White Mountain Drive  
New Bremen, OH 45869  
Phone: (419) 977-2766  
Fax: (419) 977-2767

Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/03/2020  
Date Received: 10/06/2020

Lab Number: SE1006016  
Location:  
Description: 64-B  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep</u>	<u>Analysis</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
		<u>Method</u>	<u>Method</u>	<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Oct-12	Oct-13	LMP	2.5 mg/kg	2
IB040	BARIUM	3050B	6010C	Oct-12	Oct-13	LMP	68.23 mg/kg	2
IB060	CADMIUM	3050B	6010C	Oct-12	Oct-13	LMP	ND mg/kg	0.5
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-12	Oct-13	LMP	5.95 mg/kg	1
IB120	COPPER	3050B	6010C	Oct-12	Oct-13	LMP	18.65 mg/kg	1
IB140	LEAD	3050B	6010C	Oct-12	Oct-13	LMP	11.09 mg/kg	5
IB190	NICKEL	3050B	6010C	Oct-12	Oct-13	LMP	5.11 mg/kg	1
IB210	SELENIUM	3050B	6010C	Oct-12	Oct-13	LMP	ND mg/kg	2
IB300	ZINC	3050B	6010C	Oct-12	Oct-13	LMP	75.34 mg/kg	3

**Approval**



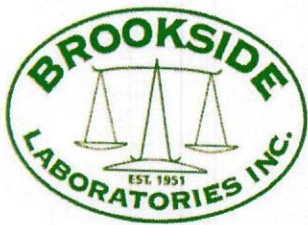
Erica Huber  
Environmental Laboratory Manager

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200 White Mountain Drive  
New Bremen, OH 45869  
Phone: (419) 977-2766  
Fax: (419) 977-2767

Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013014  
Location:  
Description: 65-A  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep</u>	<u>Analysis</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
		<u>Method</u>	<u>Method</u>	<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Oct-26	Oct-29	LMP	2.16 mg/kg	2
IB040	BARIUM	3050B	6010C	Oct-26	Oct-29	LMP	52.94 mg/kg	2
IB060	CADMIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.5
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-26	Oct-29	LMP	6.79 mg/kg	1
IB120	COPPER	3050B	6010C	Oct-26	Oct-29	LMP	21.08 mg/kg	1
IB140	LEAD	3050B	6010C	Oct-26	Oct-29	LMP	9.31 mg/kg	5
IB190	NICKEL	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1
IB210	SELENIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	2
IB300	ZINC	3050B	6010C	Oct-26	Oct-29	LMP	48.88 mg/kg	3

**Approval**

Erica Huber  
Environmental Laboratory Manager

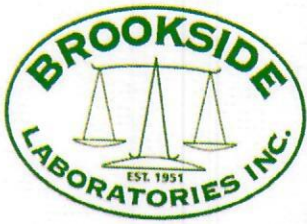
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**Brookside Laboratories, Inc.**  
**Analytical Report**

200 White Mountain Drive  
New Bremen, OH 45869  
Phone: (419) 977-2766  
Fax: (419) 977-2767

Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013015  
Location:  
Description: 65-B  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep Method</u>	<u>Analysis Method</u>	<u>Completed Prep</u>	<u>Anal</u>	<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
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**Approval**

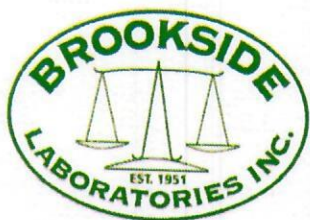
Erica Huber  
Environmental Laboratory Manager

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**Brookside Laboratories, Inc.**  
**Analytical Report**

200 White Mountain Drive  
New Bremen, OH 45869  
Phone: (419) 977-2766  
Fax: (419) 977-2767

Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013016  
Location:  
Description: 65-C  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep Method</u>	<u>Analysis Method</u>	<u>Completed Prep</u>	<u>Anal</u>	<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
IB030	ARSENIC	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1.988072
IB040	BARIUM	3050B	6010C	Oct-26	Oct-29	LMP	45.50696 mg/kg	1.988072
IB060	CADMIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.497018
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-26	Oct-29	LMP	5.417496 mg/kg	0.994036
IB120	COPPER	3050B	6010C	Oct-26	Oct-29	LMP	23.26044 mg/kg	0.994036
IB140	LEAD	3050B	6010C	Oct-26	Oct-29	LMP	6.013917 mg/kg	4.97018
IB190	NICKEL	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.994036
IB210	SELENIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1.988072
IB300	ZINC	3050B	6010C	Oct-26	Oct-29	LMP	49.61233 mg/kg	2.982108

**Approval**

Erica Huber  
Environmental Laboratory Manager

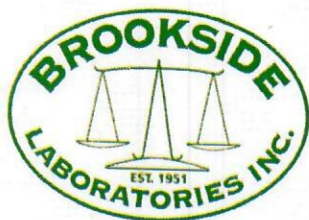
**Abbreviations/Definitions**

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**Brookside Laboratories, Inc.**  
**Analytical Report**

200 White Mountain Drive  
New Bremen, OH 45869  
Phone: (419) 977-2766  
Fax: (419) 977-2767

Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013017  
Location:  
Description: 65-D  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep Method</u>	<u>Analysis Method</u>	<u>Completed Prep</u>	<u>Anal</u>	<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
IB030	ARSENIC	3050B	6010C	Oct-26	Oct-29	LMP	2.125748 mg/kg	1.996008
IB040	BARIUM	3050B	6010C	Oct-26	Oct-29	LMP	48.52295 mg/kg	1.996008
IB060	CADMIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.499002
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-26	Oct-29	LMP	5.379241 mg/kg	0.998004
IB120	COPPER	3050B	6010C	Oct-26	Oct-29	LMP	15.42914 mg/kg	0.998004
IB140	LEAD	3050B	6010C	Oct-26	Oct-29	LMP	7.904191 mg/kg	4.99002
IB190	NICKEL	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.998004
IB210	SELENIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1.996008
IB300	ZINC	3050B	6010C	Oct-26	Oct-29	LMP	42.38522 mg/kg	2.994012

**Approval**

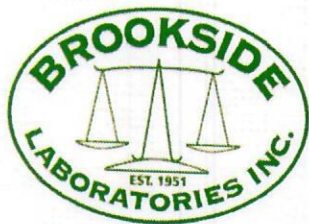
Erica Huber  
Environmental Laboratory Manager

**Abbreviations/Definitions**

**ND** = Non Detect (Values only known to be somewhere between zero and the reporting limit.)

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**Analytical Report**

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New Bremen, OH 45869  
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Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013018  
Location:  
Description: 65-E  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep</u>	<u>Analysis</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
		<u>Method</u>	<u>Method</u>	<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Oct-26	Oct-29	LMP	2.679283 mg/kg	1.992032
IB040	BARIUM	3050B	6010C	Oct-26	Oct-29	LMP	56.00597 mg/kg	1.992032
IB060	CADMIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.498008
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-26	Oct-29	LMP	5.637450 mg/kg	0.996016
IB120	COPPER	3050B	6010C	Oct-26	Oct-29	LMP	14.59163 mg/kg	0.996016
IB140	LEAD	3050B	6010C	Oct-26	Oct-29	LMP	9.193227 mg/kg	4.98008
IB190	NICKEL	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.996016
IB210	SELENIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1.992032
IB300	ZINC	3050B	6010C	Oct-26	Oct-29	LMP	43.38645 mg/kg	2.988048

**Approval**

Erica Huber  
Environmental Laboratory Manager

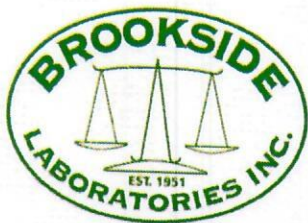
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Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013019  
Location:  
Description: 66-A  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep Method</u>	<u>Analysis Method</u>	<u>Completed Prep</u>	<u>Anal</u>	<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
IB030	ARSENIC	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	2
IB040	BARIUM	3050B	6010C	Oct-26	Oct-29	LMP	51.77 mg/kg	2
IB060	CADMIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.5
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-26	Oct-29	LMP	6.42 mg/kg	1
IB120	COPPER	3050B	6010C	Oct-26	Oct-29	LMP	29.93 mg/kg	1
IB140	LEAD	3050B	6010C	Oct-26	Oct-29	LMP	7.22 mg/kg	5
IB190	NICKEL	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1
IB210	SELENIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	2
IB300	ZINC	3050B	6010C	Oct-26	Oct-29	LMP	54.27 mg/kg	3

**Approval**

Erica Huber  
Environmental Laboratory Manager

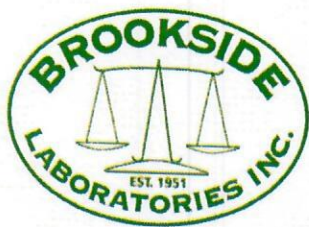
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**Analytical Report**

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Phone: (419) 977-2766  
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Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013020  
Location:  
Description: 66-B  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep Method</u>	<u>Analysis Method</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
				<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	2
IB040	BARIUM	3050B	6010C	Oct-26	Oct-29	LMP	56.58 mg/kg	2
IB060	CADMIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.5
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-26	Oct-29	LMP	7.55 mg/kg	1
IB120	COPPER	3050B	6010C	Oct-26	Oct-29	LMP	34.51 mg/kg	1
IB140	LEAD	3050B	6010C	Oct-26	Oct-29	LMP	8.95 mg/kg	5
IB190	NICKEL	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1
IB210	SELENIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	2
IB300	ZINC	3050B	6010C	Oct-26	Oct-29	LMP	56.59 mg/kg	3

**Approval**

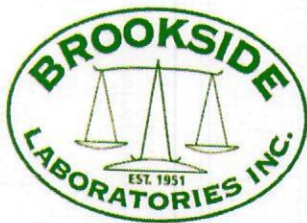
Erica Huber  
Environmental Laboratory Manager

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Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013021  
Location:  
Description: 67-A  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep Method</u>	<u>Analysis Method</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
				<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	2
IB040	BARIUM	3050B	6010C	Oct-26	Oct-29	LMP	43.42 mg/kg	2
IB060	CADMIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.5
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-26	Oct-29	LMP	5.78 mg/kg	1
IB120	COPPER	3050B	6010C	Oct-26	Oct-29	LMP	23.23 mg/kg	1
IB140	LEAD	3050B	6010C	Oct-26	Oct-29	LMP	7.39 mg/kg	5
IB190	NICKEL	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1
IB210	SELENIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	2
IB300	ZINC	3050B	6010C	Oct-26	Oct-29	LMP	47.97 mg/kg	3

**Approval**

Erica Huber  
Environmental Laboratory Manager

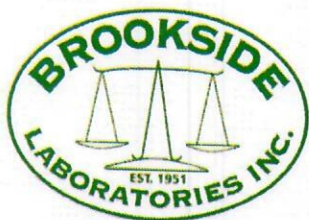
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Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013022  
Location:  
Description: 67-B  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep</u>	<u>Analysis</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
		<u>Method</u>	<u>Method</u>	<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1.980198
IB040	BARIUM	3050B	6010C	Oct-26	Oct-29	LMP	35.08910 mg/kg	1.980198
IB060	CADMIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.49505
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-26	Oct-29	LMP	4.574257 mg/kg	0.990099
IB120	COPPER	3050B	6010C	Oct-26	Oct-29	LMP	20.37623 mg/kg	0.990099
IB140	LEAD	3050B	6010C	Oct-26	Oct-29	LMP	7.851485 mg/kg	4.950495
IB190	NICKEL	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.990099
IB210	SELENIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1.980198
IB300	ZINC	3050B	6010C	Oct-26	Oct-29	LMP	44.79207 mg/kg	2.970297

**Approval**

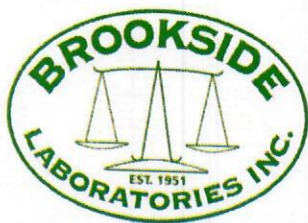
Erica Huber  
Environmental Laboratory Manager

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New Bremen, OH 45869  
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Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013023  
Location:  
Description: 67-C  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep Method</u>	<u>Analysis Method</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
				<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Oct-26	Oct-29	LMP	2.335329 mg/kg	1.996008
IB040	BARIUM	3050B	6010C	Oct-26	Oct-29	LMP	52.66467 mg/kg	1.996008
IB060	CADMIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.499002
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-26	Oct-29	LMP	8.383233 mg/kg	0.998004
IB120	COPPER	3050B	6010C	Oct-26	Oct-29	LMP	28.89221 mg/kg	0.998004
IB140	LEAD	3050B	6010C	Oct-26	Oct-29	LMP	7.524950 mg/kg	4.99002
IB190	NICKEL	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.998004
IB210	SELENIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1.996008
IB300	ZINC	3050B	6010C	Oct-26	Oct-29	LMP	72.50499 mg/kg	2.994012

**Approval**

Erica Huber  
Environmental Laboratory Manager

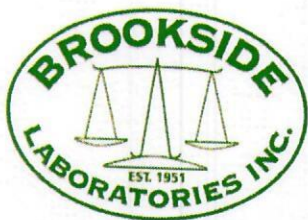
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Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013024  
Location:  
Description: 67-D  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep</u>	<u>Analysis</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
		<u>Method</u>	<u>Method</u>	<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Oct-26	Oct-29	LMP	2.455089 mg/kg	1.996008
IB040	BARIUM	3050B	6010C	Oct-26	Oct-29	LMP	54.28143 mg/kg	1.996008
IB060	CADMIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.499002
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-26	Oct-29	LMP	7.105788 mg/kg	0.998004
IB120	COPPER	3050B	6010C	Oct-26	Oct-29	LMP	27.34530 mg/kg	0.998004
IB140	LEAD	3050B	6010C	Oct-26	Oct-29	LMP	8.243513 mg/kg	4.99002
IB190	NICKEL	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.998004
IB210	SELENIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1.996008
IB300	ZINC	3050B	6010C	Oct-26	Oct-29	LMP	63.87225 mg/kg	2.994012

**Approval**

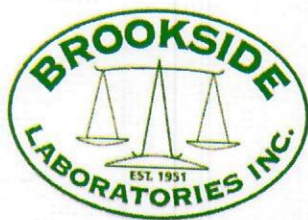
Erica Huber  
Environmental Laboratory Manager

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Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 10/9/2020  
Date Received: 10/13/2020

Lab Number: SE1013025  
Location:  
Description: 67-E  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep Method</u>	<u>Analysis Method</u>	<u>Completed Prep</u>	<u>Anal</u>	<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
IB030	ARSENIC	3050B	6010C	Oct-26	Oct-29	LMP	2.182538 mg/kg	1.984126
IB040	BARIUM	3050B	6010C	Oct-26	Oct-29	LMP	65.25790 mg/kg	1.984126
IB060	CADMIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.496032
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Oct-26	Oct-29	LMP	7.192456 mg/kg	0.992063
IB120	COPPER	3050B	6010C	Oct-26	Oct-29	LMP	40.61505 mg/kg	0.992063
IB140	LEAD	3050B	6010C	Oct-26	Oct-29	LMP	9.394836 mg/kg	4.960315
IB190	NICKEL	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	0.992063
IB210	SELENIUM	3050B	6010C	Oct-26	Oct-29	LMP	ND mg/kg	1.984126
IB300	ZINC	3050B	6010C	Oct-26	Oct-29	LMP	92.27177 mg/kg	2.976189

**Approval**

Erica Huber  
Environmental Laboratory Manager

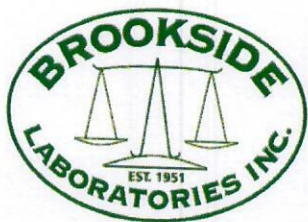
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Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 09/12/2020  
Date Received: 09/15/2020

Lab Number: SE0915066  
Location: 300-A  
Description:  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep</u>	<u>Analysis</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
		<u>Method</u>	<u>Method</u>	<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	1.988072
IB040	BARIUM	3050B	6010C	Sep-24	Sep-28	LMP	33.90656 mg/kg	1.988072
IB060	CADMIUM	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	0.497018
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Sep-24	Sep-28	LMP	4.572565 mg/kg	0.994036
IB120	COPPER	3050B	6010C	Sep-24	Sep-28	LMP	10.49702 mg/kg	0.994036
IB140	LEAD	3050B	6010C	Sep-24	Sep-28	LMP	5.636184 mg/kg	4.97018
IB190	NICKEL	3050B	6010C	Sep-24	Sep-28	LMP	5.218689 mg/kg	0.994036
IB210	SELENIUM	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	1.988072
IB300	ZINC	3050B	6010C	Sep-24	Sep-28	LMP	33.57853 mg/kg	2.982108

**Approval**



Erica Huber  
Environmental Laboratory Manager

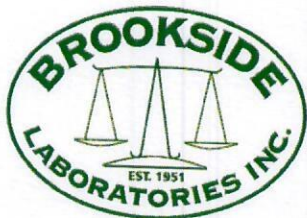
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Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 09/12/2020  
Date Received: 09/15/2020

Lab Number: SE0915067  
Location: 300-B  
Description:  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep</u>	<u>Analysis</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
		<u>Method</u>	<u>Method</u>	<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	1.984126
IB040	BARIUM	3050B	6010C	Sep-24	Sep-28	LMP	42.02378 mg/kg	1.984126
IB060	CADMIUM	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	0.496032
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Sep-24	Sep-28	LMP	7.757932 mg/kg	0.992063
IB120	COPPER	3050B	6010C	Sep-24	Sep-28	LMP	10.43650 mg/kg	0.992063
IB140	LEAD	3050B	6010C	Sep-24	Sep-28	LMP	10.98213 mg/kg	4.960315
IB190	NICKEL	3050B	6010C	Sep-24	Sep-28	LMP	13.10515 mg/kg	0.992063
IB210	SELENIUM	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	1.984126
IB300	ZINC	3050B	6010C	Sep-24	Sep-28	LMP	34.53371 mg/kg	2.976189

**Approval**



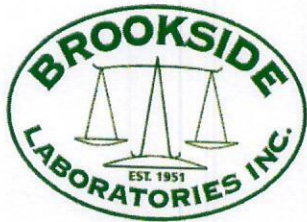
Erica Huber  
Environmental Laboratory Manager

**Abbreviations/Definitions**

**ND** = Non Detect (Values only known to be somewhere between zero and the reporting limit.)

**LOQ** = Limit of Quantitation (The lowest concentration of analyte in a sample that can be determined with acceptable precision and accuracy under the stated experimental conditions.)

**Detected** = Compound was detected between zero and the Limit of Quantitation. Limits detected below the LOQ can not be quantitated.



**Brookside Laboratories, Inc.**  
**Analytical Report**

200 White Mountain Drive  
New Bremen, OH 45869  
Phone: (419) 977-2766  
Fax: (419) 977-2767

Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 09/12/2020  
Date Received: 09/15/2020

Lab Number: SE0915068  
Location: 400-A  
Description:  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep Method</u>	<u>Analysis Method</u>	<u>Completed Prep</u>	<u>Anal</u>	<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
IB030	ARSENIC	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	2
IB040	BARIUM	3050B	6010C	Sep-24	Sep-28	LMP	25.31 mg/kg	2
IB060	CADMIUM	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	0.5
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Sep-24	Sep-28	LMP	4.57 mg/kg	1
IB120	COPPER	3050B	6010C	Sep-24	Sep-28	LMP	10.29 mg/kg	1
IB140	LEAD	3050B	6010C	Sep-24	Sep-28	LMP	5.97 mg/kg	5
IB190	NICKEL	3050B	6010C	Sep-24	Sep-28	LMP	4.03 mg/kg	1
IB210	SELENIUM	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	2
IB300	ZINC	3050B	6010C	Sep-24	Sep-28	LMP	31.27 mg/kg	3

**Approval**

Erica Huber  
Environmental Laboratory Manager

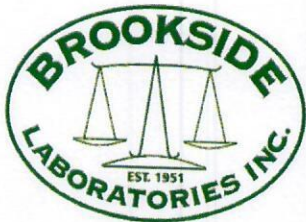
**Abbreviations/Definitions**

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**Brookside Laboratories, Inc.**  
**Analytical Report**

200 White Mountain Drive  
New Bremen, OH 45869  
Phone: (419) 977-2766  
Fax: (419) 977-2767

Client Number: 46267  
Client Name: Clean Delaware Inc.  
Consultant Name: Keen Consulting, Inc.  
Date Collected: 09/12/2020  
Date Received: 09/15/2020

Lab Number: SE0915069  
Location: 400-B  
Description:  
Sub Description:

<u>Code</u>	<u>Procedure Name</u>	<u>Prep</u>	<u>Analysis</u>	<u>Completed</u>		<u>Analyst</u>	<u>Result</u>	<u>LOQ</u>
		<u>Method</u>	<u>Method</u>	<u>Prep</u>	<u>Anal</u>			
IB030	ARSENIC	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	1.996008
IB040	BARIUM	3050B	6010C	Sep-24	Sep-28	LMP	35.72854 mg/kg	1.996008
IB060	CADMIUM	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	0.499002
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010C	Sep-24	Sep-28	LMP	5.998004 mg/kg	0.998004
IB120	COPPER	3050B	6010C	Sep-24	Sep-28	LMP	20.43912 mg/kg	0.998004
IB140	LEAD	3050B	6010C	Sep-24	Sep-28	LMP	6.936127 mg/kg	4.99002
IB190	NICKEL	3050B	6010C	Sep-24	Sep-28	LMP	4.840319 mg/kg	0.998004
IB210	SELENIUM	3050B	6010C	Sep-24	Sep-28	LMP	ND mg/kg	1.996008
IB300	ZINC	3050B	6010C	Sep-24	Sep-28	LMP	41.02794 mg/kg	2.994012

**Approval**

Erica Huber  
Environmental Laboratory Manager

**Abbreviations/Definitions**

**ND** = Non Detect (Values only known to be somewhere between zero and the reporting limit.)

**LOQ** = Limit of Quantitation (The lowest concentration of analyte in a sample that can be determined with acceptable precision and accuracy under the stated experimental conditions.)

**Detected** = Compound was detected between zero and the Limit of Quantitation. Limits detected below the LOQ can not be quantitated.



lb/A

# BROOKSIDE LABORATORIES, INC.

## SOIL AUDIT AND INVENTORY REPORT

46267-43

 Name Clean Delaware Inc. City Milton State DE

 Independent Consultant Keen Consulting, Inc. Date 10/08/2020

Sample Location		64-A	64-B			
Sample Identification						
Lab Number		0210-1	0211-1			
Total Exchange Capacity (ME/100 g)		4.51	5.54			
pH	Buffer (SMP/Sikora)	7.2	7.1			
	H <sub>2</sub> O (1:1)	6.2	6.2			
Organic Matter (360°C LOI) %		2.62	3.83			
Estimated Nitrogen Release lb/A		72	88			
ANIONS	SOLUBLE SULFUR* ppm	13	13			
	MEHLICH III lb/A P as P <sub>2</sub> O <sub>5</sub> ppm of P	1539	2143			
	BRAY II lb/A P as P <sub>2</sub> O <sub>5</sub> ppm of P					
	OLSEN lb/A P as P <sub>2</sub> O <sub>5</sub> ppm of P					
EXCHANGABLE CATIONS	CALCIUM* lb/A ppm	1068	1296			
	MAGNESIUM* lb/A ppm	534	648			
	POTASSIUM* lb/A ppm	188	252			
		94	126			
	SODIUM* lb/A ppm	172	186			
		86	93			
		28	26			
		14	13			
BASE SATURATION PERCENT						
Calcium %		59.20	58.48			
Magnesium %		17.37	18.95			
Potassium %		4.89	4.30			
Sodium %		1.35	1.02			
Other Bases %		5.20	5.20			
Hydrogen %		12.00	12.00			
EXTRACTABLE MINORS						
Boron* (ppm)		0.51	0.60			
Iron* (ppm)		217	216			
Manganese* (ppm)		30	22			
Copper* (ppm)		4.95	6.21			
Zinc* (ppm)		13.73	20.10			
Aluminum* (ppm)		1044	1179			
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					

\* Mehlich III Extractable



1b/A

# BROOKSIDE LABORATORIES, INC.

## SOIL AUDIT AND INVENTORY REPORT

46267-44

Name Clean Delaware Inc. City Milton State DE  
 Independent Consultant Keen Consulting, Inc. Date 10/15/2020

Sample Location			65-A	65-B	65-C	65-D	65-E
Sample Identification							
Lab Number			0052-1	0053-1	0054-1	0055-1	0056-1
Total Exchange Capacity (ME/100 g)			7.05	5.55	9.41	6.19	6.98
pH	Buffer (SMP/Sikora)		7.1	7.2	7.3	7.3	7.2
	H <sub>2</sub> O (1:1)		6.1	6.3	6.6	6.5	6.4
Organic Matter (360°C LOI) %			2.79	2.34	2.69	2.32	2.38
Estimated Nitrogen Release lb/A			76	67	74	66	68
ANIONS	SOLUBLE SULFUR* ppm		12	13	13	18	13
	PHOSPHORUS	MEHLICH III lb/A P as P <sub>2</sub> O <sub>5</sub>	3124	2111	3371	2574	2180
		ppm of P	682	461	736	562	476
		BRAY II lb/A P as P <sub>2</sub> O <sub>5</sub>					
		ppm of P					
	OLSEN lb/A P as P <sub>2</sub> O <sub>5</sub>						
	ppm of P						
EXCHANGABLE CATIONS	CALCIUM* lb/A		1908	1550	2864	1742	1868
	ppm		954	775	1432	871	934
	MAGNESIUM* lb/A		146	132	194	190	242
	ppm		73	66	97	95	121
	POTASSIUM* lb/A		200	124	230	146	182
	ppm		100	62	115	73	91
	SODIUM* lb/A		44	48	58	40	42
	ppm		22	24	29	20	21
BASE SATURATION PERCENT							
Calcium %			67.66	69.82	76.09	70.36	66.91
Magnesium %			8.63	9.91	8.59	12.79	14.45
Potassium %			3.64	2.86	3.13	3.02	3.34
Sodium %			1.36	1.88	1.34	1.40	1.31
Other Bases %			5.20	5.10	4.80	4.90	5.00
Hydrogen %			13.50	10.50	6.00	7.50	9.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.62	0.51	0.60	0.66	0.58
Iron* (ppm)			440	331	389	315	252
Manganese* (ppm)			31	46	19	41	39
Copper* (ppm)			9.04	5.04	9.95	6.99	6.67
Zinc* (ppm)			16.98	11.09	18.39	17.04	13.99
Aluminum* (ppm)			1426	1271	1580	1397	1349
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

\* Mehlich III Extractable



1b/A

# BROOKSIDE LABORATORIES, INC.

## SOIL AUDIT AND INVENTORY REPORT

46267-44

Name Clean Delaware Inc. City Milton State DE  
 Independent Consultant Keen Consulting, Inc. Date 10/15/2020

Sample Location			66-A	66-B			
Sample Identification							
Lab Number			0057-1	0058-1			
Total Exchange Capacity (ME/100 g)			9.12	9.62			
pH	Buffer (SMP/Sikora)		NA	7.1			
	H <sub>2</sub> O (1:1)		7.1	6.6			
Organic Matter (360°C LOI) %			3.25	4.04			
Estimated Nitrogen Release lb/A			82	90			
<b>ANIONS</b>	SOLUBLE SULFUR* ppm		10	12			
	<b>PHOSPHORUS</b>	MEHLICH III lb/A P as P <sub>2</sub> O <sub>5</sub> ppm of P	3604	3609			
		BRAY II lb/A P as P <sub>2</sub> O <sub>5</sub> ppm of P		788			
		OLSEN lb/A P as P <sub>2</sub> O <sub>5</sub> ppm of P					
<b>EXCHANGABLE CATIONS</b>	CALCIUM*	lb/A	2716	2770			
		ppm	1358	1385			
	MAGNESIUM*	lb/A	328	260			
		ppm	164	130			
	POTASSIUM*	lb/A	284	288			
		ppm	142	144			
	SODIUM*	lb/A	96	92			
		ppm	48	46			
<b>BASE SATURATION PERCENT</b>							
Calcium	%	74.45	71.99				
Magnesium	%	14.99	11.26				
Potassium	%	3.99	3.84				
Sodium	%	2.29	2.08				
Other Bases	%	4.30	4.80				
Hydrogen	%	0.00	6.00				
<b>EXTRACTABLE MINORS</b>							
	Boron* (ppm)	0.81	0.67				
	Iron* (ppm)	467	467				
	Manganese* (ppm)	22	14				
	Copper* (ppm)	13.05	14.20				
	Zinc* (ppm)	24.29	22.79				
	Aluminum* (ppm)	1519	1569				
<b>OTHER TESTS</b>	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

\* Mehlich III Extractable



lb/A

# BROOKSIDE LABORATORIES, INC.

## SOIL AUDIT AND INVENTORY REPORT

46267-44

Name Clean Delaware Inc. City Milton State DE  
 Independent Consultant Keen Consulting, Inc. Date 10/15/2020

Sample Location			67-A	67-B	67-C	67-D	67-E	
Sample Identification								
Lab Number			0059-1	0060-1	0061-1	0062-1	0063-1	
Total Exchange Capacity (ME/100 g)			7.73	6.95	6.28	15.83	19.20	
pH	Buffer (SMP/Sikora)		7.2	7.3	7.1	NA	NA	
	H <sub>2</sub> O (1:1)		6.8	6.8	6.5	7.7	7.8	
Organic Matter (360°C LOI) %			2.91	2.80	3.26	3.01	3.52	
Estimated Nitrogen Release lb/A			78	76	83	80	85	
ANIONS	SOLUBLE SULFUR* ppm		13	14	12	13	17	
	PHOSPHORUS	MEHLICH III lb/A P as P <sub>2</sub> O <sub>5</sub>	3087	2922	3366	2290	2217	
			ppm of P	674	638	735	500	484
		BRAY II lb/A P as P <sub>2</sub> O <sub>5</sub>						
			ppm of P					
	OLSEN lb/A P as P <sub>2</sub> O <sub>5</sub>							
		ppm of P						
EXCHANGABLE CATIONS	CALCIUM* lb/A		2334	2166	1798	5750	7040	
			ppm	1167	1083	899	2875	
	MAGNESIUM* lb/A		190	146	140	138	146	
			ppm	95	73	69	73	
	POTASSIUM* lb/A		212	162	188	134	128	
			ppm	106	81	94	67	
	SODIUM* lb/A		114	86	84	58	64	
			ppm	57	43	42	29	
BASE SATURATION PERCENT								
Calcium %			75.49	77.91	71.58	90.81	91.67	
Magnesium %			10.24	8.75	9.29	3.63	3.17	
Potassium %			3.52	2.99	3.84	1.09	0.85	
Sodium %			3.21	2.69	2.91	0.80	0.72	
Other Bases %			4.60	4.60	4.90	3.70	3.60	
Hydrogen %			3.00	3.00	7.50	0.00	0.00	
EXTRACTABLE MINORS								
Boron* (ppm)			0.60	0.82	0.68	0.76	0.95	
Iron* (ppm)			360	319	412	312	307	
Manganese* (ppm)			19	15	20	13	10	
Copper* (ppm)			11.28	8.83	11.03	13.20	15.48	
Zinc* (ppm)			19.27	17.03	23.33	27.15	32.76	
Aluminum* (ppm)			1482	1412	1611	944	756	
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

\* Mehlich III Extractable

a - alkaline soil



1b/A

# BROOKSIDE LABORATORIES, INC.

## SOIL AUDIT AND INVENTORY REPORT

46267-42

Name Clean Delaware Inc. City Milton State DE  
 Independent Consultant Keen Consulting, Inc. Date 09/16/2020

Sample Location			300-A	300-B				
Sample Identification								
Lab Number			0836-1	0837-1				
Total Exchange Capacity (ME/100 g)			5.66	5.22				
pH	Buffer (SMP/Sikora)		7.3	7.3				
	H <sub>2</sub> O (1:1)		6.3	6.6				
Organic Matter (360°C LOI) %			2.03	1.76				
Estimated Nitrogen Release lb/A			61	55				
<b>ANIONS</b>	SOLUBLE SULFUR* ppm		19	15				
	<b>PHOSPHORUS</b>	MEHLICH III lb/A P as P <sub>2</sub> O <sub>5</sub>	2872	2968				
			ppm of P	627	648			
		BRAY II lb/A P as P <sub>2</sub> O <sub>5</sub>						
			ppm of P					
	OLSEN lb/A P as P <sub>2</sub> O <sub>5</sub>							
		ppm of P						
<b>EXCHANGABLE CATIONS</b>	CALCIUM* lb/A		1456	1480				
		ppm	728	740				
	MAGNESIUM* lb/A		160	140				
		ppm	80	70				
	POTASSIUM* lb/A		198	160				
		ppm	99	80				
	SODIUM* lb/A		100	76				
		ppm	50	38				
<b>BASE SATURATION PERCENT</b>								
Calcium	%	64.31	70.88					
Magnesium	%	11.78	11.17					
Potassium	%	4.48	3.93					
Sodium	%	3.84	3.17					
Other Bases	%	5.10	4.80					
Hydrogen	%	10.50	6.00					
<b>EXTRACTABLE MINORS</b>								
Boron* (ppm)		0.63	0.63					
Iron* (ppm)		328	238					
Manganese* (ppm)		37	23					
Copper* (ppm)		5.47	4.90					
Zinc* (ppm)		16.58	13.55					
Aluminum* (ppm)		1128	1219					
<b>OTHER TESTS</b>	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							

\* Mehlich III Extractable



lb/A

# BROOKSIDE LABORATORIES, INC.

## SOIL AUDIT AND INVENTORY REPORT

46267-42

Name Clean Delaware Inc. City Milton State DE  
 Independent Consultant Keen Consulting, Inc. Date 09/16/2020

Sample Location		400-A	400-B				
Sample Identification							
Lab Number		0838-1	0839-1				
Total Exchange Capacity (ME/100 g)		4.10	6.22				
pH	Buffer (SMP/Sikora)	7.3	7.2				
	H <sub>2</sub> O (1:1)	6.3	6.0				
Organic Matter (360°C LOI) %		1.58	2.49				
Estimated Nitrogen Release lb/A		52	70				
<b>ANIONS</b>	SOLUBLE SULFUR* ppm		13	24			
	<b>PHOSPHORUS</b>	MEHLICH III lb/A P as P <sub>2</sub> O <sub>5</sub>	1630	3678			
			ppm of P	356	803		
		BRAY II lb/A P as P <sub>2</sub> O <sub>5</sub>					
		ppm of P					
	OLSEN lb/A P as P <sub>2</sub> O <sub>5</sub>						
		ppm of P					
<b>EXCHANGABLE CATIONS</b>	CALCIUM*	lb/A	1034	1678			
		ppm	517	839			
	MAGNESIUM*	lb/A	150	124			
		ppm	75	62			
	POTASSIUM*	lb/A	110	120			
		ppm	55	60			
	SODIUM*	lb/A	50	38			
		ppm	25	19			
<b>BASE SATURATION PERCENT</b>							
Calcium	%	63.05	67.44				
Magnesium	%	15.24	8.31				
Potassium	%	3.44	2.47				
Sodium	%	2.65	1.33				
Other Bases	%	5.10	5.40				
Hydrogen	%	10.50	15.00				
<b>EXTRACTABLE MINORS</b>							
	Boron* (ppm)	0.44	0.47				
	Iron* (ppm)	213	253				
	Manganese* (ppm)	13	9				
	Copper* (ppm)	5.73	9.10				
	Zinc* (ppm)	10.13	15.93				
	Aluminum* (ppm)	1095	1622				
<b>OTHER TESTS</b>	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

\* Mehlich III Extractable

BREAK

## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.
<b>Farm:</b>	Milton
<b>Tract Number:</b>	
<b>Field ID(s):</b>	#3 - 65-A,B

### Site Characteristics

**Rating:** 75 MEDIUM

**Enter County:** Sussex

**Enter Dominant Soil Type:** lgA- Ingleside Series (75% of map unit)

Permeability:	Moderately rapid
Drainage:	Well drained
Water Table Depth:	3.74 ft. (Average high depth)

**Artificial Drainage:**

☐ Is there artificial drainage?

**Enter % Slope:** 1

**Enter Slope Length:** 150

**Enter Cropping System:** Corn, Wheat, Double Cropped Soybeans cons. till. corn, cons. till. wheat, no-till soybeans

**Enter P Factor:** 1 (default = 1; see Tab "P" for Contour Farming or Stripcropping)

**Distance from Edge of Field to Surface Water:**

- ☒ Greater than 100 feet to surface water
- ☐ Less than 100 feet to surface water AND greater than 50 feet permanent vegetative buffer **OR** Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND greater than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
- ☐ Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND less than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
- ☐ Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND greater than 25 feet 'No P application zone'
- ☐ Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND less than 25 feet 'No P application zone'

### Fertilizer and Organic P Applications

<b>Soil Test Lab:</b>	Brookside (ppm)	<b>Enter Soil Test P2O5:</b>	831 ppm
-----------------------	-----------------	------------------------------	---------

**Planned Fertilizer P Application Rate in lbs P2O5/acre:**

↪	<b>1st P Fertilizer Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;"></span> lb/acre	<b>Method and Timing:</b>	None applied
↪	<b>2nd P Fertilizer Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;"></span> lb/acre	<b>Method and Timing:</b>	None applied
↪	<b>3rd P Fertilizer Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;"></span>	<b>Method and Timing:</b>	None applied

<b>Organic P Source:</b>	Biosolids (sewage sludge)	<b>Application Rate:</b>	1 1000 gals/acre
--------------------------	---------------------------	--------------------------	------------------

<b>Manure Analysis P2O5 (lbs):</b>	195
------------------------------------	-----

**Total Organic P Application Rate, in lbs P2O5/acre :** 195

↪	<b>1st Organic P Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;">135</span> lb/acre	<b>Method and Timing:</b>	Injected/banded below surface at least 2"
↪	<b>2nd Organic P Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;">30</span> lb/acre	<b>Method and Timing:</b>	Injected/banded below surface at least 2"
↪	<b>3rd Organic P Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;">30</span> lb/acre	<b>Method and Timing:</b>	Injected/banded below surface at least 2"



## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.			
<b>Farm:</b>	Milton	<b>Tract Number:</b>		<b>Field ID(s):</b> #3 - 65-A,B

### Calculations

#### RUSLE Calculation:

$$A = R \times K \times LS \times C \times P$$

R	K	LS	C	P
190	0.2	0.15	0.08	1

$A =$  0.46 tons of soil loss per acre

$R$  = the rainfall-runoff erosivity factor,  $K$  = the soil erodibility factor,  $LS$  = the slope length/steepness factor,

$C$  = the cropping system factor and  $P$  = the support practice factor

#### Part A: Loss Potential due to Site and Transport Characteristics:

0.30

1	2	3	4	5	6	7
0.912	0	6	4	0	4	14.912

This portion of the Phosphorus Site Index takes into account soil erosion (calculated using the RUSLE formula above), soil surface runoff class, subsurface drainage class and leaching potential, distance from edge of field to surface water, and the priority of receiving water for the site.

#### Part B: Loss Potential Due to Management Practices and P Source Characteristics:

251.400

This portion of the Phosphorus Site Index takes into account the soil test phosphorus, as well as fertilizer and organic P source application rates and methods.

#### P Site Index = Part A x Part B :

75      MEDIUM

Interpretation of the Delaware P Site Index	
<b>&lt; 50</b>	LOW potential for P movement from this site given current management practices and site characteristics. There is a low probability of an adverse impact to surface waters from P losses from this site. Nitrogen-based nutrient management planning is satisfactory for this site. Soil P levels and P loss potential may increase in the future due to the use of N-based nutrient management practices.
<b>51-75</b>	MEDIUM potential for P movement from this site given current management practices and site characteristics. Practices should be implemented to reduce P losses by surface runoff, subsurface flow, and erosion. Nitrogen-based nutrient management should be implemented no more than one year out of three. Phosphorus-based nutrient management should be implemented two years out of three during which time P applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations, whichever is greater.
<b>76-100</b>	HIGH potential for P movement from this site given current management practices and site characteristics. Phosphorus-based nutrient management should be used for this site. Phosphorus applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations. All practical management practices for reducing P losses by surface runoff, subsurface flow, or erosion should be implemented.
<b>&gt; 100</b>	VERY HIGH potential for P movement from this site given current management practices and site characteristics. No phosphorus should be applied to this site. Active remediation techniques should be implemented in an effort to reduce the P loss potential from this site.

## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.
<b>Farm:</b>	Milton
<b>Tract Number:</b>	
<b>Field ID(s):</b>	#5 - 65-C

### Site Characteristics

**Rating:** 75 MEDIUM

**Enter County:** Sussex

**Enter Dominant Soil Type:** IgB- Ingleside Series (75% of map unit)

Permeability:	Moderately rapid
Drainage:	Well drained
Water Table Depth:	3.74 ft. (Average high depth)

**Artificial Drainage:**

☐ Is there artificial drainage?

**Enter % Slope:** 1

**Enter Slope Length:** 150

**Enter Cropping System:** Corn, Wheat, Double Cropped Soybeans cons. till. corn, cons. till. wheat, no-till soybeans

**Enter P Factor:** 1 (default = 1; see Tab "P" for Contour Farming or Stripcropping)

**Distance from Edge of Field to Surface Water:**

- ☒ Greater than 100 feet to surface water
- ☐ Less than 100 feet to surface water AND greater than 50 feet permanent vegetative buffer **OR** Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND greater than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
- ☐ Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND less than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
- ☐ Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND greater than 25 feet 'No P application zone'
- ☐ Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND less than 25 feet 'No P application zone'

### Fertilizer and Organic P Applications

<b>Soil Test Lab:</b>	Brookside (ppm)	<b>Enter Soil Test P2O5:</b>	955 ppm
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**Planned Fertilizer P Application Rate in lbs P2O5/acre:**

↪	<b>1st P Fertilizer Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;"></span> lb/acre	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">None applied</span>
↪	<b>2nd P Fertilizer Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;"></span> lb/acre	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">None applied</span>
↪	<b>3rd P Fertilizer Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;"></span>	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">None applied</span>

<b>Organic P Source:</b>	Biosolids (sewage sludge)	<b>Application Rate:</b>	1 1000 gals/acre
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<b>Manure Analysis P2O5 (lbs):</b>	125
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**Total Organic P Application Rate, in lbs P2O5/acre :** 125

↪	<b>1st Organic P Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;">125</span> lb/acre	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">Injected/banded below surface at least 2"</span>
↪	<b>2nd Organic P Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;">0</span> lb/acre	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">Injected/banded below surface at least 2"</span>
↪	<b>3rd Organic P Application:</b>	<b>Rate:</b> <span style="background-color: #d9ead3;">0</span> lb/acre	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">Injected/banded below surface at least 2"</span>



## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.			
<b>Farm:</b>	Milton	<b>Tract Number:</b>		<b>Field ID(s):</b> #5 - 65-C

### Calculations

**RUSLE Calculation:**  $A = R \times K \times LS \times C \times P$

R	K	LS	C	P
190	0.2	0.15	0.08	1

$A =$  0.46 tons of soil loss per acre

$R$  = the rainfall-runoff erosivity factor,  $K$  = the soil erodibility factor,  $LS$  = the slope length/steepness factor,

$C$  = the cropping system factor and  $P$  = the support practice factor

**Part A: Loss Potential due to Site and Transport Characteristics:**

0.30

1	2	3	4	5	6	7
0.912	0	6	4	0	4	14.912

This portion of the Phosphorus Site Index takes into account soil erosion (calculated using the RUSLE formula above), soil surface runoff class, subsurface drainage class and leaching potential, distance from edge of field to surface water, and the priority of receiving water for the site.

**Part B: Loss Potential Due to Management Practices and P Source Characteristics:**

251.000

This portion of the Phosphorus Site Index takes into account the soil test phosphorus, as well as fertilizer and organic P source application rates and methods.

**P Site Index = Part A x Part B :**

75 MEDIUM

Interpretation of the Delaware P Site Index	
<b>&lt; 50</b>	LOW potential for P movement from this site given current management practices and site characteristics. There is a low probability of an adverse impact to surface waters from P losses from this site. Nitrogen-based nutrient management planning is satisfactory for this site. Soil P levels and P loss potential may increase in the future due to the use of N-based nutrient management practices.
<b>51-75</b>	MEDIUM potential for P movement from this site given current management practices and site characteristics. Practices should be implemented to reduce P losses by surface runoff, subsurface flow, and erosion. Nitrogen-based nutrient management should be implemented no more than one year out of three. Phosphorus-based nutrient management should be implemented two years out of three during which time P applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations, whichever is greater.
<b>76-100</b>	HIGH potential for P movement from this site given current management practices and site characteristics. Phosphorus-based nutrient management should be used for this site. Phosphorus applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations. All practical management practices for reducing P losses by surface runoff, subsurface flow, or erosion should be implemented.
<b>&gt; 100</b>	VERY HIGH potential for P movement from this site given current management practices and site characteristics. No phosphorus should be applied to this site. Active remediation techniques should be implemented in an effort to reduce the P loss potential from this site.

## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.
<b>Farm:</b>	Milton
<b>Tract Number:</b>	
<b>Field ID(s):</b>	#4 - 66-A,B

### Site Characteristics

**Rating:** 49 LOW

**Enter County:** Sussex

**Enter Dominant Soil Type:** DnA- Downer Series (80% of map unit)

Permeability:	Moderately rapid
Drainage:	Well drained
Water Table Depth:	6.00 ft. (Average high depth)

**Artificial Drainage:**

☐ Is there artificial drainage?

**Enter % Slope:** 1

**Enter Slope Length:** 150

**Enter Cropping System:** Corn, Wheat, Double Cropped Soybeans cons. till. corn, cons. till. wheat, no-till soybeans

**Enter P Factor:** 1 (default = 1; see Tab "P" for Contour Farming or Stripcropping)

**Distance from Edge of Field to Surface Water:**

- ☐ Greater than 100 feet to surface water
- ☒ Less than 100 feet to surface water AND greater than 50 feet permanent vegetative buffer **OR** Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND greater than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
- ☐ Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND less than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
- ☐ Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND greater than 25 feet 'No P application zone'
- ☐ Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND less than 25 feet 'No P application zone'

### Fertilizer and Organic P Applications

<b>Soil Test Lab:</b>	Brookside (ppm)	<b>Enter Soil Test P2O5:</b>	912	ppm
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**Planned Fertilizer P Application Rate in lbs P2O5/acre:**

↩	<b>1st P Fertilizer Application:</b>	<b>Rate:</b>	<span style="background-color: #ffff00;"></span> lb/acre	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">None applied</span>
↩	<b>2nd P Fertilizer Application:</b>	<b>Rate:</b>	<span style="background-color: #ffff00;"></span> lb/acre	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">None applied</span>
↩	<b>3rd P Fertilizer Application:</b>	<b>Rate:</b>	<span style="background-color: #ffff00;"></span>	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">None applied</span>

<b>Organic P Source:</b>	Biosolids (sewage sludge)	<b>Application Rate:</b>	1	1000 gals/acre
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<b>Manure Analysis P2O5 (lbs):</b>	90
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<b>Total Organic P Application Rate, in lbs P2O5/acre :</b>	90
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↩	<b>1st Organic P Application:</b>	<b>Rate:</b>	<span style="background-color: #ffff00;">30</span> lb/acre	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">Injected/banded below surface at least 2"</span>
↩	<b>2nd Organic P Application:</b>	<b>Rate:</b>	<span style="background-color: #ffff00;">30</span> lb/acre	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">Injected/banded below surface at least 2"</span>
↩	<b>3rd Organic P Application:</b>	<b>Rate:</b>	<span style="background-color: #ffff00;">30</span> lb/acre	<b>Method and Timing:</b>	<span style="background-color: #d9ead3;">Injected/banded below surface at least 2"</span>

## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.			
<b>Farm:</b>	Milton	<b>Tract Number:</b>		<b>Field ID(s):</b> #4 - 66-A,B

### Calculations

**RUSLE Calculation:**  $A = R \times K \times LS \times C \times P$

R	K	LS	C	P
190	0.15	0.15	0.08	1

$A =$  0.34 tons of soil loss per acre

$R$  = the rainfall-runoff erosivity factor,  $K$  = the soil erodibility factor,  $LS$  = the slope length/steepness factor,  $C$  = the cropping system factor and  $P$  = the support practice factor

**Part A: Loss Potential due to Site and Transport Characteristics:**

0.21

1	2	3	4	5	6	7
0.684	0	2	2	2	4	10.684

This portion of the Phosphorus Site Index takes into account soil erosion (calculated using the RUSLE formula above), soil surface runoff class, subsurface drainage class and leaching potential, distance from edge of field to surface water, and the priority of receiving water for the site.

**Part B: Loss Potential Due to Management Practices and P Source Characteristics:**

229.800

This portion of the Phosphorus Site Index takes into account the soil test phosphorus, as well as fertilizer and organic P source application rates and methods.

**P Site Index = Part A x Part B:**

49 LOW

Interpretation of the Delaware P Site Index	
<b>&lt; 50</b>	LOW potential for P movement from this site given current management practices and site characteristics. There is a low probability of an adverse impact to surface waters from P losses from this site. Nitrogen-based nutrient management planning is satisfactory for this site. Soil P levels and P loss potential may increase in the future due to the use of N-based nutrient management practices.
<b>51-75</b>	MEDIUM potential for P movement from this site given current management practices and site characteristics. Practices should be implemented to reduce P losses by surface runoff, subsurface flow, and erosion. Nitrogen-based nutrient management should be implemented no more than one year out of three. Phosphorus-based nutrient management should be implemented two years out of three during which time P applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations, whichever is greater.
<b>76-100</b>	HIGH potential for P movement from this site given current management practices and site characteristics. Phosphorus-based nutrient management should be used for this site. Phosphorus applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations. All practical management practices for reducing P losses by surface runoff, subsurface flow, or erosion should be implemented.
<b>&gt; 100</b>	VERY HIGH potential for P movement from this site given current management practices and site characteristics. No phosphorus should be applied to this site. Active remediation techniques should be implemented in an effort to reduce the P loss potential from this site.

## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.
<b>Farm:</b>	Milton
<b>Tract Number:</b>	
<b>Field ID(s):</b>	#1 - 67-A-C

### Site Characteristics

**Rating:** 66 MEDIUM

**Enter County:** Sussex

**Enter Dominant Soil Type:** DnA- Downer Series (80% of map unit)

Permeability:	Moderately rapid
Drainage:	Well drained
Water Table Depth:	6.00 ft. (Average high depth)

**Artificial Drainage:**

☐ Is there artificial drainage?

**Enter % Slope:** 1

**Enter Slope Length:** 150

**Enter Cropping System:** Corn, Wheat, Double Cropped Soybeans cons. till. corn, cons. till. wheat, no-till soybeans

**Enter P Factor:** 1 (default = 1; see Tab "P" for Contour Farming or Stripcropping)

**Distance from Edge of Field to Surface Water:**

- ☐ Greater than 100 feet to surface water
- ☒ Less than 100 feet to surface water AND greater than 50 feet permanent vegetative buffer **OR** Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND greater than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
- ☐ Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND less than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
- ☐ Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND greater than 25 feet 'No P application zone'
- ☐ Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND less than 25 feet 'No P application zone'

### Fertilizer and Organic P Applications

<b>Soil Test Lab:</b>	Brookside (ppm)	<b>Enter Soil Test P2O5:</b>	919 ppm
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**Planned Fertilizer P Application Rate in lbs P2O5/acre:**

↪	<b>1st P Fertilizer Application:</b>	<b>Rate:</b> <span style="background-color: #ffff00;"></span> lb/acre	<b>Method and Timing:</b>	None applied
↪	<b>2nd P Fertilizer Application:</b>	<b>Rate:</b> <span style="background-color: #ffff00;"></span> lb/acre	<b>Method and Timing:</b>	None applied
↪	<b>3rd P Fertilizer Application:</b>	<b>Rate:</b> <span style="background-color: #ffff00;"></span>	<b>Method and Timing:</b>	None applied

<b>Organic P Source:</b>	Biosolids (sewage sludge)	<b>Application Rate:</b>	1 1000 gals/acre
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<b>Manure Analysis P2O5 (lbs):</b>	300
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<b>Total Organic P Application Rate, in lbs P2O5/acre :</b>	300
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↪	<b>1st Organic P Application:</b>	<b>Rate:</b> <span style="background-color: #ffff00;">100</span> lb/acre	<b>Method and Timing:</b>	Injected/banded below surface at least 2"
↪	<b>2nd Organic P Application:</b>	<b>Rate:</b> <span style="background-color: #ffff00;">100</span> lb/acre	<b>Method and Timing:</b>	Injected/banded below surface at least 2"
↪	<b>3rd Organic P Application:</b>	<b>Rate:</b> <span style="background-color: #ffff00;">100</span> lb/acre	<b>Method and Timing:</b>	Injected/banded below surface at least 2"

## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.			
<b>Farm:</b>	Milton	<b>Tract Number:</b>		<b>Field ID(s):</b> #1 - 67-A-C

### Calculations

**RUSLE Calculation:**  $A = R \times K \times LS \times C \times P$

R	K	LS	C	P
190	0.15	0.15	0.08	1

$A =$  0.34 tons of soil loss per acre

$R$  = the rainfall-runoff erosivity factor,  $K$  = the soil erodibility factor,  $LS$  = the slope length/steepness factor,  $C$  = the cropping system factor and  $P$  = the support practice factor

**Part A: Loss Potential due to Site and Transport Characteristics:**

0.21

1	2	3	4	5	6	7
0.684	0	2	2	2	4	10.684

This portion of the Phosphorus Site Index takes into account soil erosion (calculated using the RUSLE formula above), soil surface runoff class, subsurface drainage class and leaching potential, distance from edge of field to surface water, and the priority of receiving water for the site.

**Part B: Loss Potential Due to Management Practices and P Source Characteristics:**

306.800

This portion of the Phosphorus Site Index takes into account the soil test phosphorus, as well as fertilizer and organic P source application rates and methods.

**P Site Index = Part A x Part B:**

66 MEDIUM

Interpretation of the Delaware P Site Index	
<b>&lt; 50</b>	LOW potential for P movement from this site given current management practices and site characteristics. There is a low probability of an adverse impact to surface waters from P losses from this site. Nitrogen-based nutrient management planning is satisfactory for this site. Soil P levels and P loss potential may increase in the future due to the use of N-based nutrient management practices.
<b>51-75</b>	MEDIUM potential for P movement from this site given current management practices and site characteristics. Practices should be implemented to reduce P losses by surface runoff, subsurface flow, and erosion. Nitrogen-based nutrient management should be implemented no more than one year out of three. Phosphorus-based nutrient management should be implemented two years out of three during which time P applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations, whichever is greater.
<b>76-100</b>	HIGH potential for P movement from this site given current management practices and site characteristics. Phosphorus-based nutrient management should be used for this site. Phosphorus applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations. All practical management practices for reducing P losses by surface runoff, subsurface flow, or erosion should be implemented.
<b>&gt; 100</b>	VERY HIGH potential for P movement from this site given current management practices and site characteristics. No phosphorus should be applied to this site. Active remediation techniques should be implemented in an effort to reduce the P loss potential from this site.

## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.		
<b>Farm:</b>	Milton	<b>Tract Number:</b>	
		<b>Field ID(s):</b>	#2 - 67-D,E
<b>Site Characteristics</b>		<b>Rating:</b> <span style="color: red;">69</span> <span style="color: red;">MEDIUM</span>	
<b>Enter County:</b>	Sussex		
<b>Enter Dominant Soil Type:</b>	IeA- Ingleside Series (75% of map unit)		
Permeability:	Moderately rapid		
Drainage:	Well drained		
Water Table Depth:	3.74	ft. (Average high depth)	
<b>Artificial Drainage:</b>			
<input type="checkbox"/> Is there artificial drainage?			
<b>Enter % Slope:</b>	1		
<b>Enter Slope Length:</b>	150		
<b>Enter Cropping System:</b>	Hay		
<b>Enter P Factor:</b>	1	(default = 1; see Tab "P" for Contour Farming or Stripcropping)	

Distance from Edge of Field to Surface Water:	
<input checked="" type="radio"/>	Greater than 100 feet to surface water
<input type="radio"/>	Less than 100 feet to surface water AND greater than 50 feet permanent vegetative buffer <b>OR</b> Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND greater than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
<input type="radio"/>	Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND less than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
<input type="radio"/>	Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND greater than 25 feet 'No P application zone'
<input type="radio"/>	Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND less than 25 feet 'No P application zone'

### Fertilizer and Organic P Applications

<b>Soil Test Lab:</b>	Brookside (ppm)	<b>Enter Soil Test P2O5:</b>	719 FIV
<b>Planned Fertilizer P Application Rate in lbs P2O5/acre:</b>			
➤	<b>1st P Fertilizer Application:</b>		
	Rate:	lb/acre	Method and Timing: None applied
➤	<b>2nd P Fertilizer Application:</b>		
	Rate:	lb/acre	Method and Timing: None applied
➤	<b>3rd P Fertilizer Application:</b>		
	Rate:		Method and Timing: None applied
<b>Organic P Source:</b>	Biosolids (sewage sludge)	<b>Application Rate:</b>	1 1000 gals/acre
<b>Manure Analysis P2O5 (lbs):</b>		235	
<b>Total Organic P Application Rate, in lbs P2O5/acre :</b>		235	
➤	<b>1st Organic P Application:</b>		
	Rate: 135	lb/acre	Method and Timing: Injected/banded below surface at least 2"
➤	<b>2nd Organic P Application:</b>		
	Rate: 50	lb/acre	Method and Timing: Injected/banded below surface at least 2"
➤	<b>3rd Organic P Application:</b>		
	Rate: 50	lb/acre	Method and Timing: Injected/banded below surface at least 2"



## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.
<b>Farm:</b>	Harbeson
<b>Tract Number:</b>	
<b>Field ID(s):</b>	300

### Site Characteristics

**Rating:** 60 MEDIUM

**Enter County:** Sussex

**Enter Dominant Soil Type:** PsA- Pepperbox Series (45% of map unit)

Permeability:	Moderate
Drainage:	Moderately well drained
Water Table Depth:	2.49 ft. (Average high depth)

**Artificial Drainage:**

☐ Is there artificial drainage?

**Enter % Slope:** 1

**Enter Slope Length:** 150

**Enter Cropping System:** Corn, Wheat, Double Cropped Soybeans cons. till. corn, cons. till. wheat, no-till soybeans

**Enter P Factor:** 1 (default = 1; see Tab "P" for Contour Farming or Stripcropping)

**Distance from Edge of Field to Surface Water:**

- ☒ Greater than 100 feet to surface water
- ☐ Less than 100 feet to surface water AND greater than 50 feet permanent vegetative buffer **OR** Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND greater than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
- ☐ Less than 100 feet to surface water AND greater than 25 feet permanent vegetative buffer AND less than 25 feet additional 'No P application zone' beyond permanent vegetative buffer
- ☐ Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND greater than 25 feet 'No P application zone'
- ☐ Less than 100 feet to surface water AND less than 25 feet permanent vegetative buffer AND less than 25 feet 'No P application zone'

### Fertilizer and Organic P Applications

<b>Soil Test Lab:</b>	Brookside (ppm)	<b>Enter Soil Test P2O5:</b>	899 ppm
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**Planned Fertilizer P Application Rate in lbs P2O5/acre:**

↩	<b>1st P Fertilizer Application:</b>	Rate: <span style="background-color: #d9ead3;"></span> lb/acre	Method and Timing: <span style="background-color: #d9ead3;">None applied</span>
↩	<b>2nd P Fertilizer Application:</b>	Rate: <span style="background-color: #d9ead3;"></span> lb/acre	Method and Timing: <span style="background-color: #d9ead3;">None applied</span>
↩	<b>3rd P Fertilizer Application:</b>	Rate: <span style="background-color: #d9ead3;"></span>	Method and Timing: <span style="background-color: #d9ead3;">None applied</span>

<b>Organic P Source:</b>	Biosolids (sewage sludge)	<b>Application Rate:</b>	1 1000 gals/acre
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<b>Manure Analysis P2O5 (lbs):</b>	235
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**Total Organic P Application Rate, in lbs P2O5/acre :** 235

↩	<b>1st Organic P Application:</b>	Rate: <span style="background-color: #d9ead3;">135</span> lb/acre	Method and Timing: <span style="background-color: #d9ead3;">Injected/banded below surface at least 2"</span>
↩	<b>2nd Organic P Application:</b>	Rate: <span style="background-color: #d9ead3;">50</span> lb/acre	Method and Timing: <span style="background-color: #d9ead3;">Injected/banded below surface at least 2"</span>
↩	<b>3rd Organic P Application:</b>	Rate: <span style="background-color: #d9ead3;">50</span> lb/acre	Method and Timing: <span style="background-color: #d9ead3;">Injected/banded below surface at least 2"</span>

## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.			
<b>Farm:</b>	Harbeson	<b>Tract Number:</b>		<b>Field ID(s):</b> 300

### Calculations

**RUSLE Calculation:**  $A = R \times K \times LS \times C \times P$

R	K	LS	C	P
190	0.15	0.15	0.08	1

$A =$  0.34 tons of soil loss per acre

$R$  = the rainfall-runoff erosivity factor,  $K$  = the soil erodibility factor,  $LS$  = the slope length/steepness factor,  $C$  = the cropping system factor and  $P$  = the support practice factor

**Part A: Loss Potential due to Site and Transport Characteristics:**

0.21

1	2	3	4	5	6	7
0.684	2	4	0	0	4	10.684

This portion of the Phosphorus Site Index takes into account soil erosion (calculated using the RUSLE formula above), soil surface runoff class, subsurface drainage class and leaching potential, distance from edge of field to surface water, and the priority of receiving water for the site.

**Part B: Loss Potential Due to Management Practices and P Source Characteristics:**

279.400

This portion of the Phosphorus Site Index takes into account the soil test phosphorus, as well as fertilizer and organic P source application rates and methods.

**P Site Index = Part A x Part B:**

60 MEDIUM

Interpretation of the Delaware P Site Index	
<b>&lt; 50</b>	LOW potential for P movement from this site given current management practices and site characteristics. There is a low probability of an adverse impact to surface waters from P losses from this site. Nitrogen-based nutrient management planning is satisfactory for this site. Soil P levels and P loss potential may increase in the future due to the use of N-based nutrient management practices.
<b>51-75</b>	MEDIUM potential for P movement from this site given current management practices and site characteristics. Practices should be implemented to reduce P losses by surface runoff, subsurface flow, and erosion. Nitrogen-based nutrient management should be implemented no more than one year out of three. Phosphorus-based nutrient management should be implemented two years out of three during which time P applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations, whichever is greater.
<b>76-100</b>	HIGH potential for P movement from this site given current management practices and site characteristics. Phosphorus-based nutrient management should be used for this site. Phosphorus applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations. All practical management practices for reducing P losses by surface runoff, subsurface flow, or erosion should be implemented.
<b>&gt; 100</b>	VERY HIGH potential for P movement from this site given current management practices and site characteristics. No phosphorus should be applied to this site. Active remediation techniques should be implemented in an effort to reduce the P loss potential from this site.

## Delaware Phosphorus Site Index

<b>Operation Name:</b>	Clean Delaware, Inc.			
<b>Farm:</b>	Milton	<b>Tract Number:</b>		<b>Field ID(s):</b> #2 - 67-D,E

### Calculations

**RUSLE Calculation:**  $A = R \times K \times LS \times C \times P$

R	K	LS	C	P
190	0.15	0.15	0.01	1

$A =$  0.04 tons of soil loss per acre

$R$  = the rainfall-runoff erosivity factor,  $K$  = the soil erodibility factor,  $LS$  = the slope length/steepness factor,

$C$  = the cropping system factor and  $P$  = the support practice factor

**Part A: Loss Potential due to Site and Transport Characteristics:**

0.28

1	2	3	4	5	6	7
0.0855	0	6	4	0	4	14.0855

This portion of the Phosphorus Site Index takes into account soil erosion (calculated using the RUSLE formula above), soil surface runoff class, subsurface drainage class and leaching potential, distance from edge of field to surface water, and the priority of receiving water for the site.

**Part B: Loss Potential Due to Management Practices and P Source Characteristics:**

243.400

This portion of the Phosphorus Site Index takes into account the soil test phosphorus, as well as fertilizer and organic P source application rates and methods.

**P Site Index = Part A x Part B :**

69 MEDIUM

Interpretation of the Delaware P Site Index	
<b>&lt; 50</b>	LOW potential for P movement from this site given current management practices and site characteristics. There is a low probability of an adverse impact to surface waters from P losses from this site. Nitrogen-based nutrient management planning is satisfactory for this site. Soil P levels and P loss potential may increase in the future due to the use of N-based nutrient management practices.
<b>51-75</b>	MEDIUM potential for P movement from this site given current management practices and site characteristics. Practices should be implemented to reduce P losses by surface runoff, subsurface flow, and erosion. Nitrogen-based nutrient management should be implemented no more than one year out of three. Phosphorus-based nutrient management should be implemented two years out of three during which time P applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations, whichever is greater.
<b>76-100</b>	HIGH potential for P movement from this site given current management practices and site characteristics. Phosphorus-based nutrient management should be used for this site. Phosphorus applications should be limited to the amount expected to be removed from the field by crop harvest or soil test based P application recommendations. All practical management practices for reducing P losses by surface runoff, subsurface flow, or erosion should be implemented.
<b>&gt; 100</b>	VERY HIGH potential for P movement from this site given current management practices and site characteristics. No phosphorus should be applied to this site. Active remediation techniques should be implemented in an effort to reduce the P loss potential from this site.

# **APPENDIX E**

## **SITE AND EQUIPMENT PHOTOGRAPHS**



**MILTON FIELDS**





**MILTON AND HARBESON FIELDS**





**MILTON FIELDS**





**MILTON FIELDS**





**MILTON FIELDS**





**SITE EQUIPMENT**



**SITE EQUIPMENT**





**SITE EQUIPMENT**





**SITE EQUIPMENT**





**SITE EQUIPMENT**

# **APPENDIX F**

**SOP FOR LAND APPLICATION OF MULTIPLE WASTES**

**SOP FOR SPRAY FIELD APPLICATION**

# **STANDARD OPERATING PROCEDURE**

## **CLEAN DELAWARE**

SOP Name:	<b>Land Application of Multiple Wastes</b>
Date Issued:	November 1, 2017
Authorized By:	Gerry Desmond

### **SCOPE**

The land application of waste is a key component of Clean Delaware's business. Handling and disposing organic waste products satisfy a need in the food processing and municipal waste industries. Due to the nature of these products, none are conducive to the waste stream of area WWTPs and most are regulated away from those sites. Disposal sites are limited. Clean Delaware's ability to handle these products provides beneficial reuse to the land and is an important business strategy.

### **HEALTH AND SAFETY HAZARDS**

Care should always be taken when working around wastewater, equipment, liquid under pressure and moving components. Ear protection, safety glasses and gloves are recommended when involved with the process of staging equipment for land application. Also be aware of surrounding activity.

### **ENVIRONMENTAL HAZARDS**

Failure to properly operate and monitor land application procedures could result in the impact of ground water.

### **QUALITY HAZARDS**

Disposal of products offsite require significant down time and greatly impact Clean Delaware's ability help those industries who require our services to operate.

### **RESPONSIBILITIES**

Every employee is responsible to follow the procedures in this document.

### **EQUIPMENT REQUIRED**

Case 9260 Tractor

Houle 5250 Liquid spreader with deflector plate and sweep injectors

John Deere 8650 Tractor

John Deere disks

## **PROCEDURES**

### General Requirements

#### Field Demonstration

- Passes are made across the field and parallel to each other from one side to the other. This process may be repeated several times, and then the same pattern is made on a perpendicular route across the field. The checkered pattern helps to distribute products with different nutrient uptake requirements in one field.
- If compelled by DNREC, and to promote specific characterization of land applied products, a material such as grease can be injected in one direction with a specific marker noting the application stop area. A material such as Dogfish can be overhead applied perpendicular to the grease pattern with its own specific marker. These products can also be mixed and attempted to be applied together but not always at a specific ratio. Any other land application products can be dealt with in this similar manner.
- Care should be taken to avoid repeated trips over the same tire tracks in order to reduce compaction and rutting.
- Straight passes continue across the field, the buffer area is used to travel over and return to loading area. Turning in the field should be avoided
- Cone or post markers will be used to identify the last pass of the day over a field. When application resumes, it will begin at this cone.
- Nutrients loading and farming practices influence field rotation.
- One field per year remains unplanted throughout the summer for land application.

#### Overhead Spray deflection

- This method of land application is running the liquid manure spreader across the field with the pressurized tank blowing the product across a deflector plate and onto the field in a 40-foot pattern over the ground.
- The tractor is run at between 2.5 and 4 mph or other predetermined speed until the entire pass is covered. The speed will influence the operator's ability to either off load one full load in exactly one or two passes over field.
- The PTO is run at about 800 rpm on the spreader
- Once the application occurs, incorporation of the product by means of disking is done within 6 hours or as practicable to prevent vectors.
- The operator is responsible for reporting weather conditions, field position, method of application, the products applied, any seasonal avoidance areas, then date and sign the daily field map.



### Subsurface Injection

- This method of land application is running the liquid manure spreader across the field with the pressurized tank subsurface injecting the product across a sweep disk and into the field in a 12-foot-wide pattern and underground.
- The tractor is run at between 2.5 and 4 mph or other predetermined speed until the entire pass is covered. The speed will influence the operator's ability to either off load one full load in exactly one or two passes over field.
- The PTO is run at about 600 rpm on the spreader
- Once the application occurs, no other incorporation is required.
- The operator is responsible for reporting weather conditions, field position, method of application, the products applied, any seasonal avoidance areas, then date and sign the daily field map.

### Storage and Off-Site Considerations

- Clean Delaware has recently purchased an additional 65,000 gallons of temporary storage containment to go along with the 51,000 gallon tanker storage. We can now also store products individually in one of the three containers or together if requested by DNREC for assurance that products are applied evenly across a field.
- Clean Delaware now disposes of Dogfishhead brewery waste at the Kent County WWTP and at Delcora in Chester, Pennsylvania during inclement weather or excessively during times of diminished storage capacity.
- Clean Delaware now also disposes Grease, Liquid Sludge, and other miscellaneous waste at Delcora in Chester, Pennsylvania during inclement weather or times of diminished storage capacity.

### Product Characteristics

- Dogfishhead Brewery Waste accounts for about 80% of our land application and has about 85% nutrient value of grease per gallon.
- Restaurant Grease accounts for about 15-20% of our land application and has about 20% more nutrients than Dogfish per gallon.
- J.G. Townsend seasonally account for up to 5% of our land application and has 3 to 4 times the nutrient value of grease and Dogfish per gallon.
- If other single loads of a product are taken and land applied, they should be mixed with Grease prior to application.
- SBR sludge from Perdue, Liquid sludge from Selbyville, Bridgeville, Lewes, Milton and other sanitary municipal sludge are not being applied to Clean Delaware land in consideration of current public opinion.

### Limiting factors to spray application

- Land application should coincide with the weather. Care should be taken **NOT** to apply during rain or snow events or immediately following those events. The forecast should play a big part in operating the application site.
- Field conditions such as saturation, ponding or puddling will also disrupt land application and should be avoided.
- Wind may be a factor if strong and blowing toward our neighbors.
- Alternative disposal sites should be used when any of the conditions stated continue to exist and the Clean Delaware facility nears storage capacity.
- Small grain crops are grown throughout the year. A crop is planted once each field is vacated.

### **COMMUNICATION**

All above standards are to be kept by authorized operators of the facility. If a violation is noticed management must be notified, documented and fixed.

### **REVIEW**

This SOP will be reviewed annually or as changes occur.

CLEAN DELAWARE, INC.


# **STANDARD OPERATING PROCEDURE**

## **CLEAN DELAWARE**

SOP Name:	<b>Spray Field Application</b>
Date Issued:	November 1, 2017
Authorized By:	Gerry Desmond

### **SCOPE**

The treatment, then spray application of treated septic and holding tank waste is a key component of Clean Delaware's business. Handling and disposing of these products satisfy a need in the community where central sewer systems are not available. Due to our remote location within the region, reliable disposal sites are limited. Clean Delaware's ability to handle these products provides beneficial reuse to the land and is an important business strategy.

### **HEALTH AND SAFETY HAZARDS**

Care should always be taken when working around wastewater, equipment, liquid under pressure and moving components. Ear protection, safety glasses and gloves are recommended when involved with the process of staging equipment for land application. Also be aware of surrounding activity.

### **ENVIRONMENTAL HAZARDS**

Failure to properly operate and monitor land application procedures could result in the impact of ground water.

### **QUALITY HAZARDS**

Disposal of products offsite require significant down time and greatly impact Clean Delaware's ability to service customers.

### **RESPONSIBILITIES**

Every employee is responsible to follow the procedures in this document.

### **EQUIPMENT REQUIRED**

John Deere 4045 Diesel with Rainbow pump

iMag 4700 flow meter

(3) Amadas travelling Water Reels

(3) Nelson 150 Series Big Guns

## PROCEDURES

### General Requirements

#### Field Positioning (Zones 1-4)

- Reels must be placed in specifically identified fields and pulled out to assigned marking posts.
- When pulled out to each of the premeasured posts, application rate will be uniform across fields and buffered limiting zones will be maintained.
- **After two passes are made across any one zone, the reel should be moved to a different non applied zone.**
- **Spray application must be uniform across all fields.**
- Maximum application rate is .25 inches daily per application per zone.
- Maximum application rate is 1 inches weekly application per zone.
- Maximum application rate is 270,000 gallons per acre yearly per zone.

#### Engine start up

- Only when certain that reels are secure and in place should the pumping unit be turned on. Ensure that all covers, screens and/or plates are in place to protect workers from the hazards of moving parts.
- Re circulate storage tank effluent by opening valve at pump to tank and shutting valve at pump to spray field in order to mix products and reduce settling.
- Start engine and throttle up to 1600 rpm.
- Once circulation is satisfactorily achieved (about 20 minutes), reverse valves to send flow to spray field reels.
- Throttle engine to about 1800 rpm and flowmeter to **135 gpm for one reel.**
- Throttle engine to about 2100 rpm and flowmeter to **270 gpm for two reels.**
- Record flow meter readings for starting total gallons and instantaneous gpm.
- Record field position of reel(s) used for spray application.
- Date and initial daily log.

#### Setting up Reel

- Place each reel in assigned corridor at center of specified zone
- Place retractable outriggers firmly into the ground to prevent movement and to provide stability to reel.
- **WITH PUMP OFF** attach and ensure all hose clamps and fitting between riser assembly in ground and to reel are secure and tight.



- With clutch in neutral and with reel brake in contact with drum use a tractor to slowly pull gun stand along straight path to marking post. Decelerate 15-20 yards prior to stopping to avoid free wheeling of drum.
- Gun should be pointed to side (not toward tractor) so in cases where liquid is thrust from the hose, contact with operator is avoided.
- The drive engine on reel should be set up so that pulleys are in position for the **hose to travel at five feet per minute**. Confirm by measuring the distance of a point on the hose travels in one minute.
- Adjust rpm on drive engine as required.
- Engage clutch on drum assembly then release brake. Start pulling in reel only after pumping unit is on and the psi and gpm parameters are achieved.

#### Spray performance

- The Nelson 150 Series Big Gun should be outfitted with a .86 inch ring nozzle. The gun performance with this nozzle at 90 psi is 135 gpm.
- **Travelling at five feet per minute with an effective coverage diameter of 230 feet, the instantaneous watering rate is .19 inches per pass**
- **No more than five passes in one zone should ever occur in one week**

#### Limiting factors to spray application

- Application of spray effluent should coincide with the weather. Care should be taken **NOT** to spray during rain or snow events or immediately following those events. The forecast should play a big part in operating the spray site.
- Field conditions such as saturation, ponding or puddling will also disrupt spray application and should be avoided.
- Wind, especially out of the North will impact drift and should be avoided.
- Alternative disposal sites should be used when any of the conditions stated continue to exist and the Clean Delaware facility nears storage capacity.
- Crop removal. At times throughout the year, hay will be cut, let to dry, then baled. Spray should be restrained from any section during this process.

### COMMUNICATION

All above standards are to be kept by authorized operators of the facility. If a violation is noticed management must be notified, documented and fixed.

### REVIEW

This SOP will be reviewed annually or as changes occur.


**CLEAN DELAWARE, INC  
MONTHLY SPRAY FIELD APPLICATION**

CLEAN DELAWARE, INC.

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